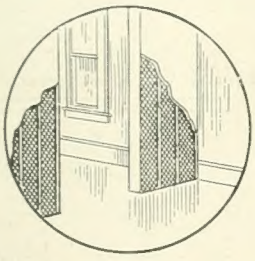
THE CANADIAN
BUILDER

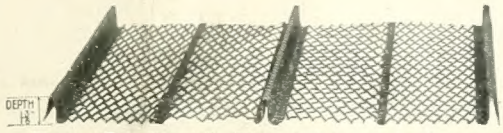
Published Monthly by The Commercial Press, Limited, 32 Colborne St., Toronto

PEDLAR'S RIB FABRIC

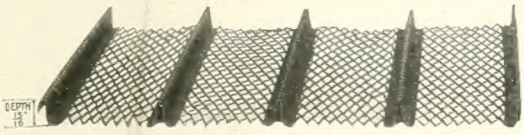
Permits the construction of partition walls and ceilings without forms or centering



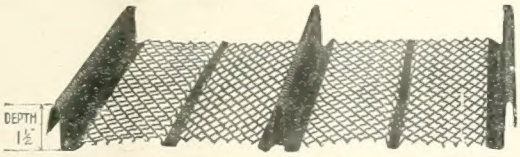
Pedlar's Rib Fabric, as can be seen in the sectional cuts here shown, is made of a diamond-shaped expanded metal mesh, stiffened at intervals by rigid high ribs. The whole sheet, ribs and mesh, is cut and cold-drawn from one sheet of steel.



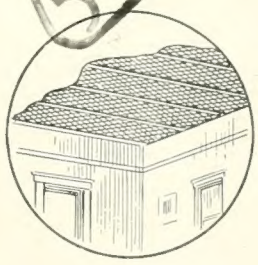
Three "Rib Fabric"—Ribs 13/16 in. high, 8 ins. apart. Sheets 16 ins. wide. Standard length, 6, 8, 10 and 12 feet. Gauges, 22, 24, 26 and 28.



Five "Rib Fabric"—Ribs 15/16 in. high, 4 in. apart. Sheets 16 in. wide. Standard lengths, 6, 8, 10 and 12 feet. Gauges 22, 24, 26 and 28.



Deep "Rib Fabric"—Rib 1½ in. high, 7 inches apart. Sheets 14 in. wide. Standard lengths, 6, 8, 10 and 12 feet. Gauges 22, 24, 26 and 28.



This material for partition and ceiling work, is lath and studding all in one, with a straight and true lath surface that provides a perfect clinch while requiring the minimum quantity of plaster.

Pedlar's Rib Fabric prevents the cracking of plaster because it cannot warp. It is also fire-proof, and has nothing in its composition to encourage the activities of rats, mice or other vermin.

Permanent fire-proof construction is called for everywhere nowadays. Pedlar's Rib Fabric and other standard sheet metal building products, provide a range of fireproofing suitable for a very large variety of constructional purposes.

Write for Rib Fabric Booklet B. C.

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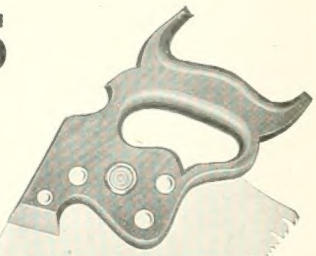
New Saw for Double Duty Work



THIS DISSTON D17 DOUBLE DUTY HANDSAW far excels any other pattern ever made for use in heavy construction work of all kinds—studding up houses, shoring for sewers, making forms for concrete building, railroad work, millwright farm use, and in fact for all general purposes.

The combination of crosscut and rip teeth with the very deep gullets enables this saw to crosscut, rip or cut diagonally across the grain with great ease and rapidity.

The most practical saw of the kind ever made.

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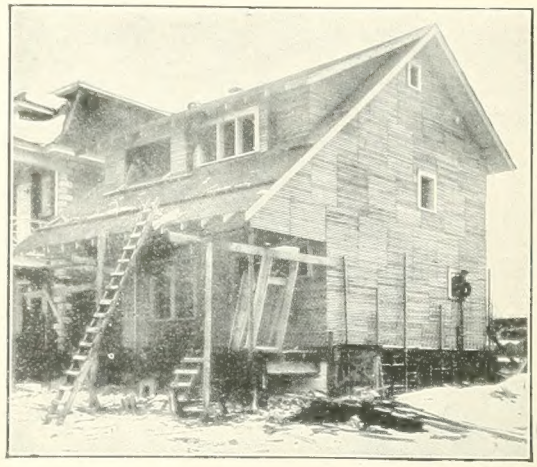

House being built in below zero weather, for W. A. Rankin, Fentiman Ave., Ottawa, Ont.

Build all Winter with

BISHOPRIC STUCCO BOARD

Winter and early spring weather has no effect on Bishopric Stucco Board, and there are plenty of carpenters to be had in February and March.
Start your building now—while labor is most readily available. You will be just that far ahead when the warmer weather comes.
Bishopric Stucco Board as a foundation for all interior plaster and for stucco on exterior walls, takes the place of boarding, sheathing, furring strips and laths, saves over 50% in material, time and labor.

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Send for samples and prices of our brick

For permanency and beauty Port Credit Brick have no rival. They give to the building a dignity, a refinement, yet retain that expression of permanency.

Builders in using Port Credit Brick create a prestige and distinction with their customers.

Port Credit Brick make a buildingimpervious to the elements.

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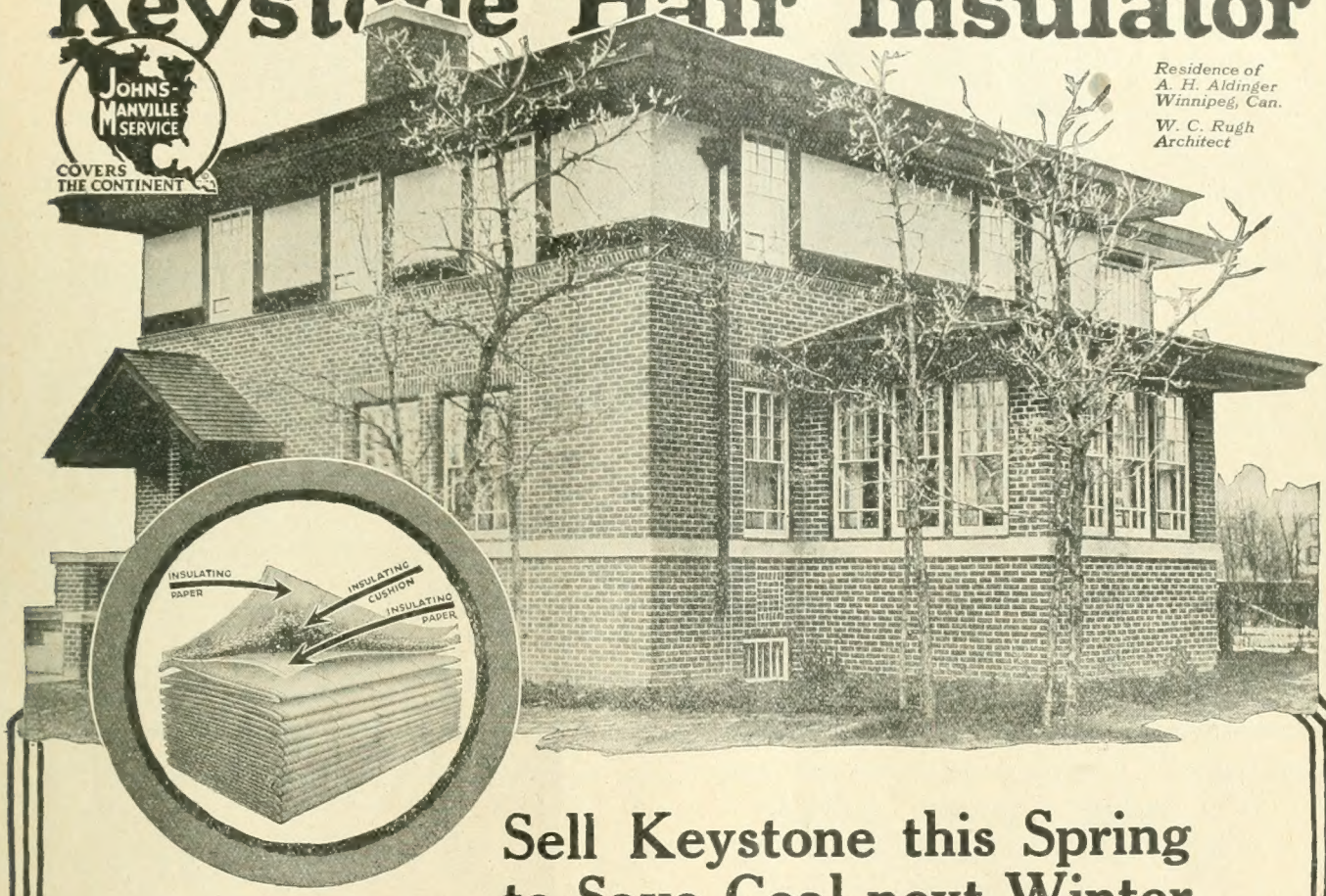
Johns-Manville
Keystone Hair Insulator

JOHNS-MANVILLE SERVICE
COVERS THE CONTINENT



Residence of A. H. Aldinger Winnipeg, Can.
W. C. Rugh Architect

Sell Keystone this Spring to Save Coal next Winter

Johns-Manville Keystone Hair Felt Insulation is recommended for insulating walls of

Dwellings
Garages
Poultry Houses
Dairy Houses
Fireless Cookers
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Ice Boxes
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Special booklet sent on request.

WITH coal almost unobtainable at any price, and with the same fuel shortage possible next winter, wall insulation takes on a new importance. That is why home builders will be especially interested in insulation efficiency—and that is why it will be easier than ever to sell them Keystone. For Keystone is the most efficient heat and cold insulation on the market—it keeps out the most cold and saves the most fuel.

And builders like Keystone because bulk for bulk it is the lightest in weight, is easy to handle, goes on fast, and keeps time costs down.

The Canadian H. W. Johns-Manville Co., Limited

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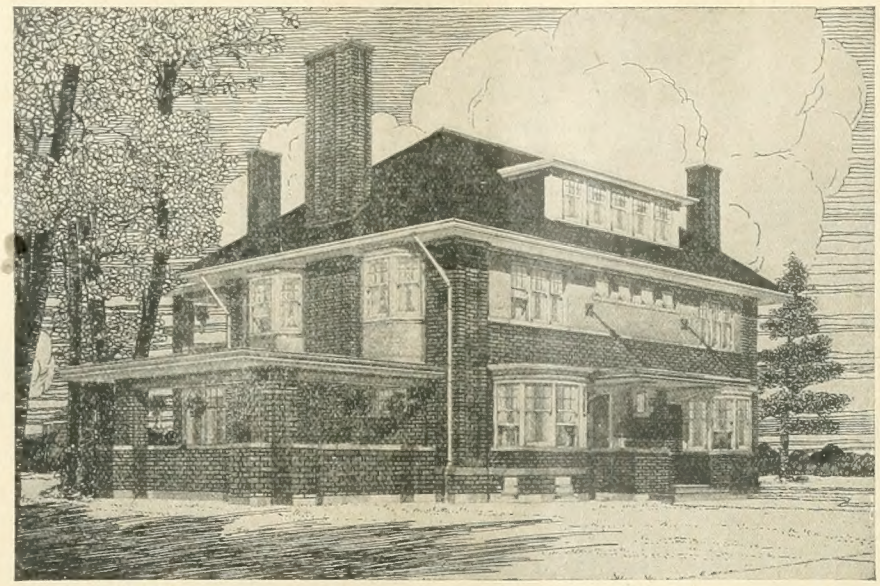

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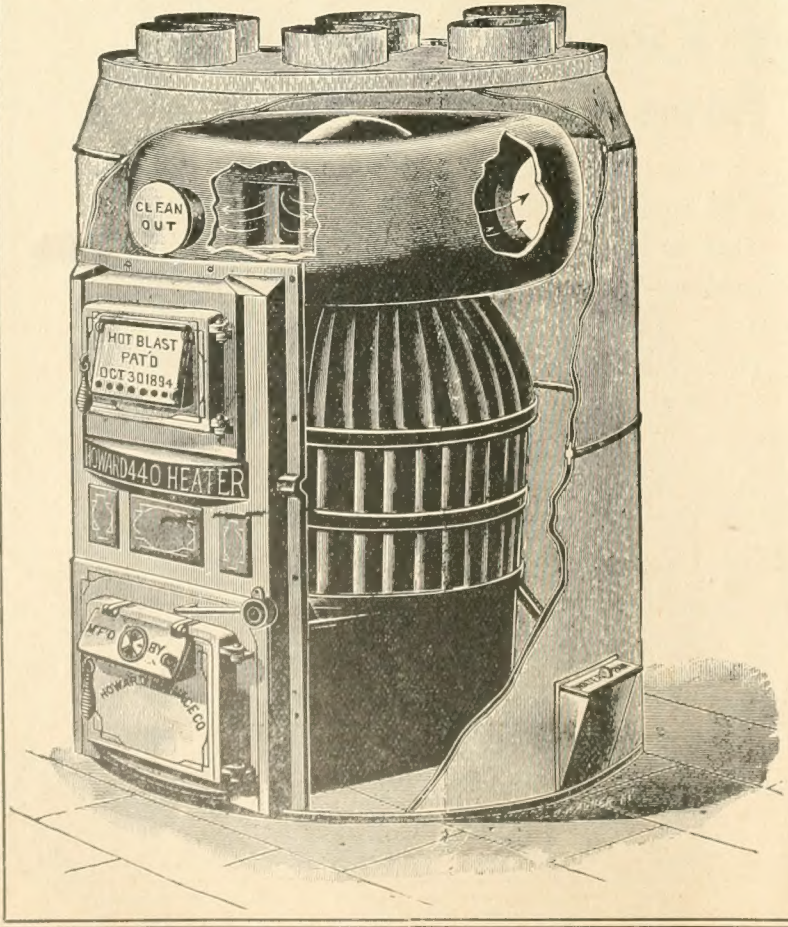

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did you tell your client you would install a furnace?

OR

did you tell him that his house would be heated?

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are absolutely guaranteed to do what a good furnace should do. Drop us a line, or phone, and let us tell you more about them. Made, guaranteed, and installed by

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THE CANADIAN BUILDER

D. O. McKINNON, General Manager — Published by The Commercial Press, Ltd., 32 Colborne St., Toronto, Ont. — G. C. KEITH, M.Sc., Editor

VOLUME 8 — TORONTO, MARCH, 1918 — NUMBER 3

Editorial Comment

Labor-Saving Devices

Beginning with this issue of The Canadian Builder, we start a series of articles on labor-saving devices, showing the savings to builders by their use, in dollars and cents. The article in this issue is on derricks. In following numbers, woodworkers, concrete mixers, carpenters' levels, etc., will be similarly treated. The series will be a valuable one and readers should watch for these articles and see that they receive every issue containing them.

Be Accurate

There are two forms of accuracy. There is the accuracy of knowledge and the accuracy of performance. Information on any subject is useless unless it is accurate. Where there is doubt, or lack of corroborative detail, or insufficient data, there must be investigation, checking up and proof. A young man must know. Guesswork does not suffice. Accuracy of knowledge coupled with accuracy of performance puts in the hands of a young man a double barreled gun. That you must hit the mark—if it is aimed right—good marksmanship is, of course, essential. But if you have that, and the double barreled "accuracy gun" is at your shoulder, you are bound to "land on the target."

1917 Building Material Production Figures Show Increase

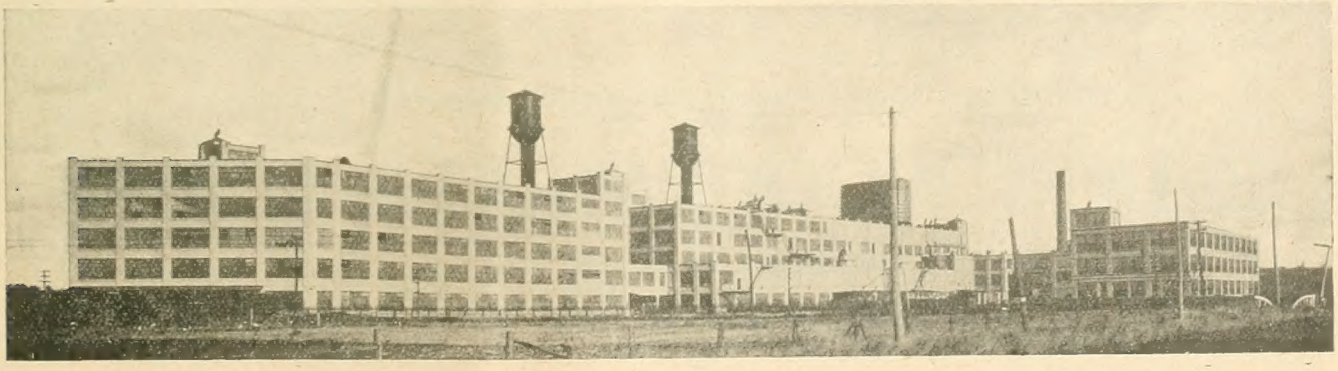
The preliminary report of the mineral production for Canada in 1917 has been issued. The total value of the non-metallic production, including clay and quarry products in 1917, was $86,352,085, as compared with $70,882,169 in 1916, showing an average increase of $15,469,916, or 26 per cent. Practically every product, with the exception of the stone quarry output, shows an increased value of production; but in the case of coal, graphite, gypsum, and cement, the quantities actually marketed were less, notwithstanding the increased values.

The following table shows the output for Canada in 1917:

Product—	Value 1916	Value 1917
Brick, common	$1,826,844	$2,017,046
Brick, pressed and paving	543,601	589,406
Kaolin	17,500	9,594
Pottery	61,069	122,878
Refractories, fireclay, firebrick, etc.	234,562	210,838
Sewerpipe	716,287	778,159
Tile	359,387	434,465
Fireproofing, hollow blocks	361,555	441,369
Gypsum	738,593	887,120
Lime	1,091,463	1,517,918
Sand lime brick	126,235	143,393

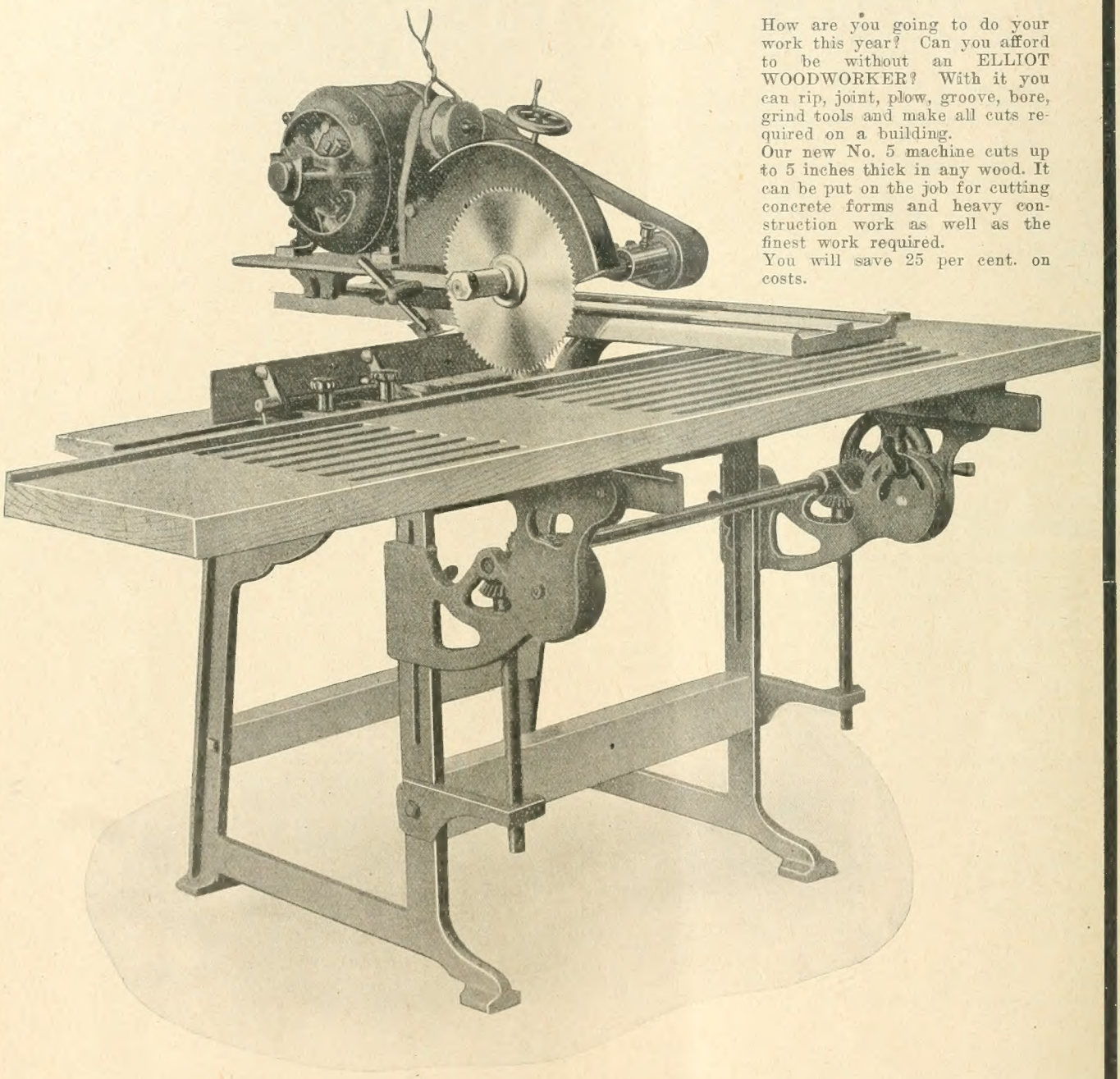
Ontario figures have also been issued and are as follows:

Product—	Value 1916	Value 1917
Brick, fancy and pressed	$ 318,942	$ 462,357
Brick, common	509,559	769,340
Tile, drain	275,471	468,886
Tile, hollow blocks	176,953	301,528
Cement, Portland	2,242,433	2,934,271
Gypsum, crushed, ground and calcined	116,206	128,828
Lime	265,356	269,461
Pottery	87,025	94,501
Sand and gravel	470,963	427,303
Sewer pipe	216,749	205,810
Stone, building, trap, granite	755,313	749,160



New Canadian Kodak Company's plant at Mount Dennis, near Toronto.

Carpenters and Builders



How are you going to do your work this year? Can you afford to be without an ELLIOT WOODWORKER? With it you can rip, joint, plow, groove, bore, grind tools and make all cuts required on a building.
Our new No. 5 machine cuts up to 5 inches thick in any wood. It can be put on the job for cutting concrete forms and heavy construction work as well as the finest work required.
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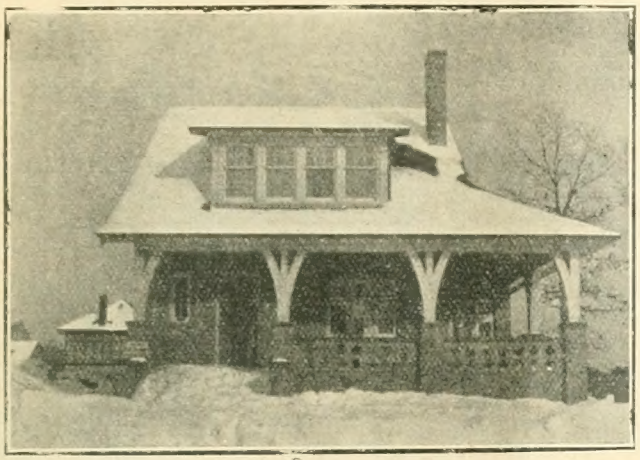


Bungalow-Type Brick Residence with Many Features

With plans and full description of many details.

Illustration shows brick residence of Mr. G. T. Gayton, Scarboro Road, Toronto.

THE dwelling illustrated has many excellent features which will appeal to Canadian builders. Among them are a verandah with concrete floor and brick balustrade; glass doors downstairs except in the kitchen, those between hall and living room and between livingroom and diningroom being sliding doors, large stone fireplace, pantry with cupboards, ironing board cupboard, etc.

A number of interesting details may be gathered from the following description. The first paragraph of the specifications below deserves special attention:

"Contractors tendering on this work shall be required to visit the premises so as to become familiar with the natural fall of the ground, as it will be the duty of the contractor who is entrusted with the work to do all the grading and filling necessary to comply with the requirements of the drawings.

Each contractor shall lay out his own work and be responsible for its correctness. He shall carefully protect all materials and finished work and shall do all cutting and fitting necessary for the other trades to properly carry out their work.

Excavator to excavate for the whole of the basement as shown on plan, also for footings of all walls, cross-walls, piers, etc. Specifications also provide for filling and sodding.

Concrete footings were laid under all walls, composed of Portland cement, clean, sharp sand and freshly broken hard stone, small enough to pass through a 1½ in. ring and thoroughly screened in the following proportions:—1 part cement, 2 parts sand, and 4 parts stone.

Foundation walls are as shown, 16 in. and 12 in. thick, built of Credit Valley coursed ashler, laid in lime mortar. All foundation walls below grade are tarred with a thick coat of hot pitch.

Walls and piers are of brick laid in mortar composed of one part lime to three parts sand. Corners are laid so that four rise not higher than 11¾ ins. when laid up in the wall. Brick work is bonded every sixth course.

Brick 14 in. piers are built in the basement as shown, cement mortar being used consisting of one part cement and three parts sand.

The verandah balustrade and parapet walls are brick, laid with cement mortar and provided with cut stone capping. The front steps are of brick.

There is a damp-proof course extending continuously through all exterior walls, placed at top of footing. This course consisted of tarred felt well pitched between layers.

The fireplace in the living room is built of red sandstone laid in black mortar. The hearth is 4 in. concrete on brick arch.

All openings in brick walls have cut stone heads and sills.

The basement has a 5 in. concrete floor laid as follows: The earth was levelled and tamped; broken stone was laid 3 in. thick, wetted and packed; concrete 2½ ins. thick was then laid. It was composed of one part cement, three parts sand, and five parts small, broken stone. This is finished with half in. layer of two parts cement and three parts sand, laid with gradual slope to bell trap.

The floors of the varandah and conservatory are concrete 4 ins. thick, reinforced with No. 10 gauge expanded metal 3 in. mesh. Floors were finished smooth with mixture of one part cement to one part sand.

The ground floor joists are 2x10 hemlock at 16 in. centres; first floor 2x8, and ceiling joists 2x6. The roof rafters are 2x6 hemlock placed at 18 in. centres. All joists have 2x2 herringbone bridging every eight feet in span. Anchors are placed 8 ft. apart and extend over two spans of joists where joists run parallel to the wall and on every sixth joist where ends run into walls.

The roof is formed with 2x6 in. rafters at 18 in. centres well spiked to 4x4 wall plate. Ridge board is 2x8 in. Roof rafters are covered with 1x8 in. matched hemlock.

The flooring throughout is ⅞x3½ in. T G pine. The diningroom, livingroom and hall of ground floor, and vestibule, will have over-floor of ⅜ ins. quarter cut oak.

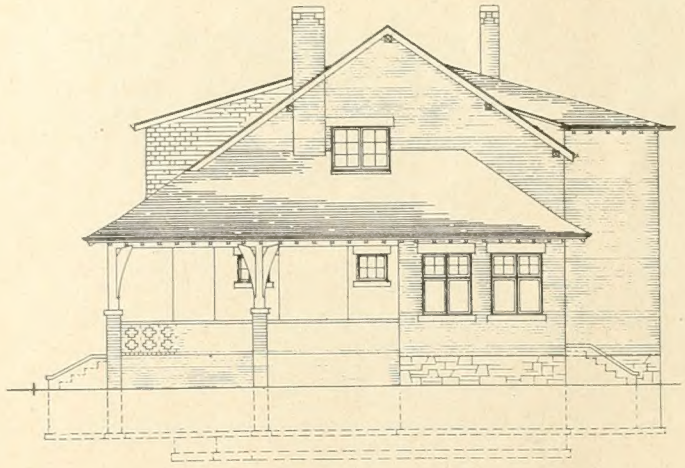
Partitions are of 2x4 ins. at 16 ins. centres.

Doors except for kitchen are fitted with small lights. The door between the dining room and pantry is double action. The room finish, except in the kitchen, is red oak.

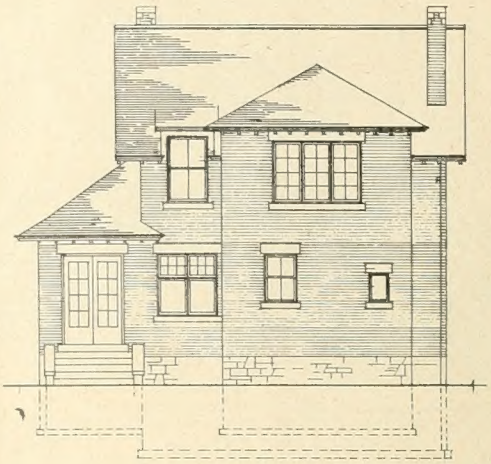
The main stairs are hardwood with 2 in. moulded wall string, moulded and panelled parapet string, 6 in. square newels with moulded cap and base, 3x5 moulded handrail and 2 in. square balusters. Rear stairs meet the main stairs at the landing.

Parlor and dining room have picture moulding.

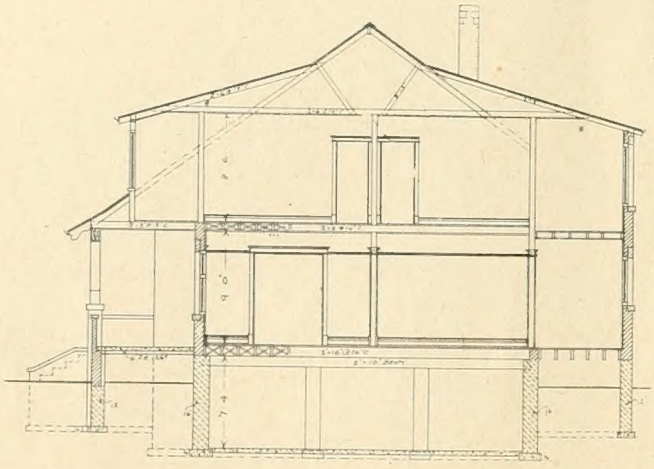
In the pantry are built-in cupboards with drawers and shelves and doors below. The upper part has



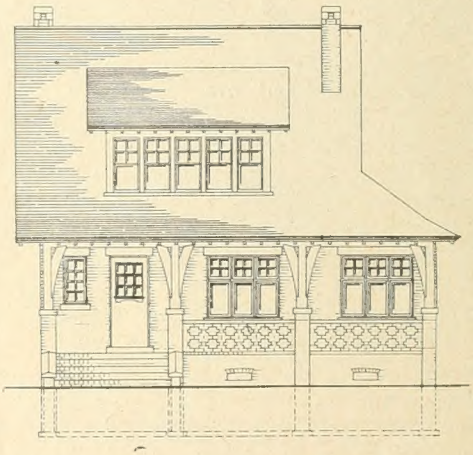
SOUTH ELEVATION.



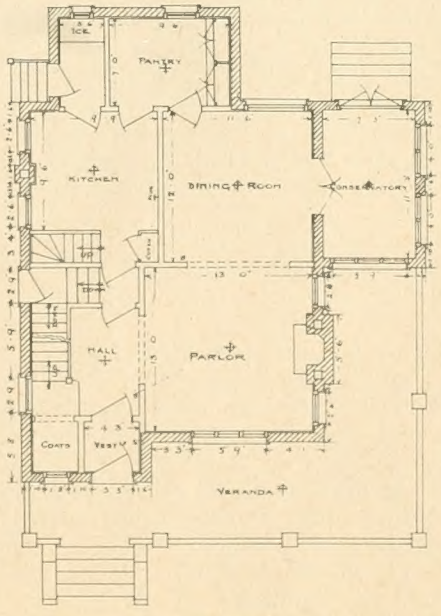
REAR ELEVATION.



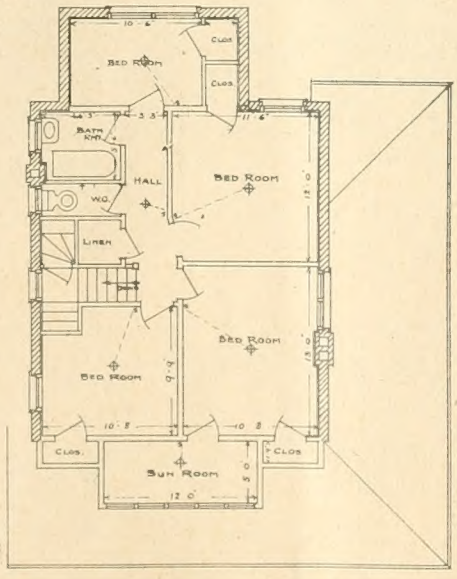
SECTIONAL ELEVATION.



FRONT ELEVATION.



GROUND FLOOR PLAN.



BEDROOM FLOOR PLAN.

ELEVATIONS AND PLANS OF BUNGALOW TYPE RESIDENCE OF MR. G. T. GAYTON

shelves and glass doors. Pantry and kitchen are sheeted to a height of 3 ft. 6 ins., with pine. A 20x30 in. sink is located in the pantry.

The plaster is two coat work. The first coat is of gray lime in proportion 3 to 1, mixed with cow hair. Second coat is white putty finish.

The house is completely wired and furnished with flush switches.

THE BUILDING OUTLOOK FOR THIS YEAR

Giving an idea of what to expect judging from activities in Toronto.

THAT there will be considerable building activity in Canada this year is certain. Cities and towns are finding that their populations are increasing without a corresponding provision for housing the increase in inhabitants. Many industries, too, put off the construction of new buildings last year and are now practically compelled to build additions to their present plants, and in many cases new factories.

The increased manufacturing facilities means that more houses are necessary for new employees. This has created a condition which had to be dealt with by the factory management when builders did not grasp the opportunity.

The Montreal Light, Heat and Power Co. have erected many excellent houses at Shawinigan Falls, the Norton Co. at Chippewa, the Plymouth Cordage Co. at Welland, the Canada Cement Co. at Montreal, etc. It is contended that after production the erection of houses for employees is next in importance.

It is stated by contractors that in order to construct homes for the working classes, which can be rented at a reasonable sum and yet make a fair return on capital invested, it will be necessary to substitute for some materials generally used in construction. The employment of certain substitutes of high merit will reduce building costs considerably. Brick and cement have not increased in price to any appreciable amount, as a study of price lists will show. This means that with these building materials a building can be erected to-day at a figure that compares favorably with costs in 1912.

Builders can make up for the higher cost of labor by utilizing labor-saving equipment such as derricks, combination woodworkers, etc.

To give an idea of work now under way or contemplated, readers will, we believe be interested in a perusal of the following items referring to construction in Toronto:

The Bowes Co. will erect a $20,000 five-story brick addition to their warehouse at 14 Orillia St.

Swift-Canadian Co. will erect a $3,000 loading dock at their West Toronto warehouse.

Toronto Hydro-Electric System, transformer house, foot of Bathurst St., $1,500.

F. M. Sloan, two-story brick dwelling and private garage at 29 Oriole Road, $12,000.

Bell Telephone Co., addition to exchange, 207 Cowan Ave., $3,800.

Crown Realty Co. will erect six brick houses on Kew Beach Ave. Foundations are now being installed.

George Nicholson will build ten five-room houses at the corner of Queen and Lockwood Sts.

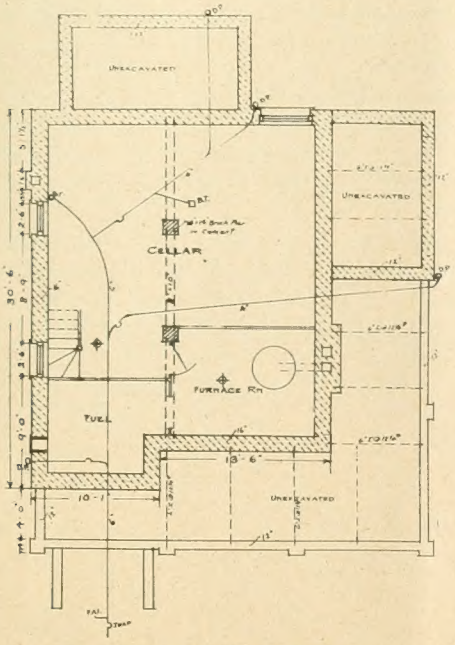
Many houses are being built in Woodmount Park, north of Danforth, by another builder.

One builder is preparing plans for twenty-five houses.

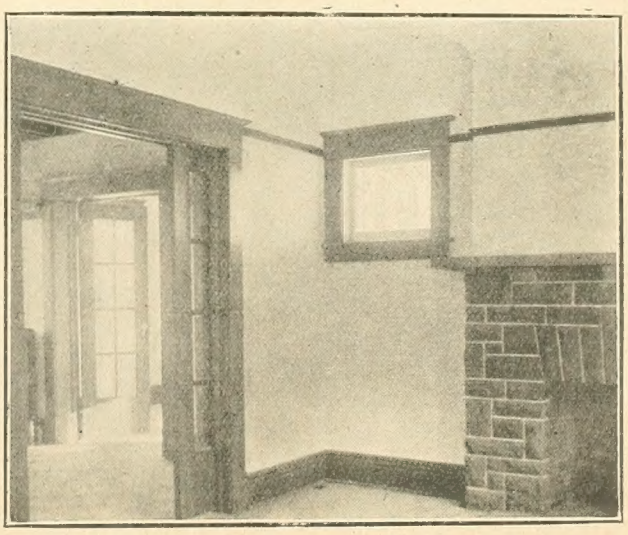
Toronto Harbor Commission will erect ferry sheds at foot of Bay St. Cost, $10,000.

The Royal Flying Corps, 56 Church St., are erecting a warehouse and barracks at Weston Road and St. Clair Ave. Engineer, J. B. Carswell, 56 Church St.

Rumors are current to the effect that work on the new store building which the T. Eaton Company propose to erect at the corner of College and Yonge Sts., may commence this spring. A permit for one portion of the structure, to cost



Basement plan of Mr. Gayton's house.



View from hall showing fireplace, sliding glass doors between living and dining room and glass door to conservatory.

$3,000,000, was taken out last year, but no further action was taken.

The Militia Department has made application to the City Architect's Department for a permit to increase the height of the National Cash Register factory on Christie St., Toronto, which they recently acquired for the purpose of using as a hospital. Part of the building is now one story and part two storys, and it is proposed to raise it to four storys, at an expenditure of about $140,000.

Messrs. O. and W. R. Smith will erect a planing mill at No. 12 Drayton Ave.

The Department of the Secretary, Provincial Government, Toronto, have included in their estimates for 1918, $75,000 for two additional buildings to the Mimico buildings.

Brown & Cooper, Ltd., 297 Carlton St., have the general contract for a $15,000 manufacturing plant for the Toronto Laundry Machinery Company, 1951 Dundas St. W.

The Consumers Supply Co., 115 Bay St., have taken out a permit for a 13,000 gasoline supply station at the corner of St. Clair Ave. and Vaughan Road.

Plans have been prepared for a $40,000 two-story and reinforced concrete garage for A. D. Currie & Co., 205 Victoria St.

McDonald & Warburton, Ford dealers, will erect a large garage on the north side of Bloor St., just west of Manning Ave

Work is still being carried on on the new Union Station.

Rumor says that a new Loew's Theatre will be erected at the corner of Yonge and Bloor Sts.

Bowles Lunch have purchased property at the corner of Bay and Front Sts., and a new lunch room will be erected.

Permits for the superstructure of the main buildings of the Dominion Shipbuilding Co.'s plant at the foot of Bathurst St., Toronto, have been granted. The estimated cost of this portion of the works is $175,000, and the entire plant will cost $2,500,000. The buildings will be of steel and hollow tile, 198 by 469 ft., and with structures to be erected later the plant will have a frontage of 800 ft. The work is being carried on by the Harbor Commissioner's department.

The Beaver Brass & Ornamental Iron Co., 24 Adelaide St. W., Toronto, will build a kiln at the rear of 8 Ryerson St., to cost $10,000.

The Board of Control, Toronto, is having plans prepared for the erection of a plant to manufacture street cars, etc. It will be completed and ready for operation by 1921. R. C. Harris is commissioner of works.

The Ontario Wind Engine & Pump Co. Ltd., Liberty St., Toronto, will build an addition to its plant to cost $10,000

The Continental Publishing Co. are erecting a five-story bulding 100x100 ft., on Spadina Ave.

Kent & Essery have cleared a large property on Spadina Ave., expecting to build on it in the spring.

T. Eaton Co. have under erection a warehouse at the harbor, and another on Coxwell Ave.

The estimates at the Department of Public Works, Provincial Government, for Osgoode Hall include $3,500 for fittings for central vault, $1,500 for alterations to buildings, and $1,500 for painting interior and exterior. Secretary, H. F. McNaughton, Parliament Buildings.

Plans are being prepared for a theatre to be erected by Jule Allan, et al, 58 St. Andrews' Gardens. Architects, Hynes, Feldman & Walton, 105 Bond St.

Plans have been drawn for a one-story brick addition to factory for the Toronto Furniture Company, 163 Dufferin St.

John V. Gray Construction Co. have been awarded the contract for a brick and steel sash enclosure for the shipping platform for the Canada Cycle and Motor Company, Weston, to cost $5,000. Bernard H. Prack, architect.

Plans have been prepared for a $40,000 two-story brick and reinforced concrete garage for A. D. Currie & Co. Ltd., 205 Victoria St.

Tenders will be called about March 11 for the erection of a five-story brick addition to bakery for the Ideal Bread Co. Ltd., 183 Dovercourt Rd. Architect, Sydney Comber, Room 213, 511 St. Catherine St. W., Montreal.

Childs have started work on an $80,000 restaurant on Yonge St., where the old Vendome Hotel was located.

It will be noted that this does not take into consideration any individual residences and garages, the construction of hundreds of which are being undertaken almost monthly.

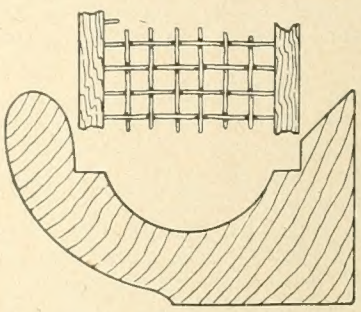
More Than $20,000,000 Worth of Buildings Being Considered

An official in the City Architect's department made the statement that if structural steel can be procured more than $20,000,000 worth of building construction will be carried on this year in the city of Toronto.

The Bureau of Statistics and Research of Chicago wrote to the City Architect asking what the building prospects are here, and what difficulties were encountered in the labor market. The reply stated that the prospects are excellent. Transportation difficulties are very slight, labor troubles and shortage very small, but that structural steel was more difficult to procure. The Chicago people want to know many things about the building situation in Toronto, and the replies are in all cases optimistic and even encouraging to investors and erectors.

Sanitary Chalk Rail

This pattern shows a chalk rail in which the crayons are kept clean and out of the dust by a strip of woven wire laid over the dust chamber. It is replacing a lot



Chalk rail for schools, with dust chamber and wire screen.

of the old-style rail in modern schoolhouses, and is the type of rail installed on all the blackboards of the Central Technical School, Toronto.

Manufacturer Looks After Housing of Employees

To accommodate his employees, Mr. J. N. Brown, of Brown's Copper & Brass Rolling Mills, says he has prepared plans for a block of 100 houses, to cost on the average $2,000. They will face Fifth St., Sixth St., New Toronto St., and Birmingham Ave. The Brown Copper & Brass Rolling Mills Co., have so far constructed thirty frame houses, each costing $1,500, but many more are required to meet the needs of their 900 employees.

On Ninth St., contractors are also busy erecting forty more residences of a better class, costing around $3,000 each. Four of these are now under way and are capitalized by a company composed of Sir Henry Pellatt, Frederick B. Robins, of Robins, Limited; C. H. Carlisle, of the Goodyear Tire and Rubber Company, J. N. Brown of Brown's Copper and Brass Rolling Mills and others.

Poetry *vs.* Forestry

Visitor—Wonderful old oak; I wonder what you would say to me if you could speak?

Gardener (visibly affected)—Well, my guess is: "I beg your pardon, Miss, but I am a beech."

DERRICK SAVINGS *in* DOLLARS *and* CENTS

First of a series of articles showing it is cheaper to buy help than to hire it.

SOME builders, especially the smaller ones, employing from five to fifteen men, have long cherished the idea that they could not afford labor-saving equipment. That this is a false and expensive idea is evidenced by the fact that they cannot compete with their more up-to-date brothers.

Proper and sufficient equipment on the job means more work with less men, in a shorter time. Equipment relieves the workmen of heavy lifting and straining, so naturally this results in more cheerful workers, and leaves them to pursue the essential handwork with more vim.

Equipment may be classed as general, and specialty. General equipment, is that used by all trades engaged in the erection of buildings. Specialty equipment is that used largely by one branch.

It is estimated that one-third of the costs of an average job is expended in handling, lifting and placing, the various materials to be used. This applies to most building trades. Then the derrick is one of the most useful units in general equipment.

Considerable thought should be given the purchase of a derrick. If the builder is doing work which necessitates the shifting of the derrick from place to place, a light and compact one must be chosen. Having this in view, strength must not be sacrificed for lightness. He must next decide the capacity required for his particular work, and if hand or power operated.

The hand derrick is a very efficient machine and will serve the purpose of most builders. Fig. 1 illustrates a very handy and compact derrick. It is easily moved and can be set up in a few minutes without trouble. They are made in capacities of from half-ton up to five ton. The prices of these derricks are very reasonable, and in most cases can be bought on terms to suit the purchaser. The lighter ones require only one man to wind them up, but those of two to five tons generally require two men. Most derricks are rigged for two speeds. Light loads are taken up on high speed, and heavier loads on low speed.

One will be wise to choose a derrick which exceeds the actual capacity needed. This will give a wider working range.

Savings to Bricklayer or Mason

For the bricklayer or mason a derrick is a real money-saver on a job. To get the maximum service in handling brick, mortar, cement, tile, etc., a number of boxes should be made as follows: Use 2 in. stuff and make them 4 ft. long, 2 ft. wide, and 2 ft. deep. Brace the inside corners well, with 2 x 2 in. angle iron. Run 3 16 x 2 in. iron straps (on the outside) around the bottom, and up the sides, about 4 in. from each end. By means of these straps fasten strong steel loops on the bottom of the box, and hooks on the top. This provides a means by which two or more such boxes can be coupled together, thus taking a number in one lift. Each box when filled with ordinary brick will weigh about 750 lbs., and carry about 350 brick. As many of these boxes as the job warrants should be available, so as some of the brick can be unloaded from the wagons, directly into them. If larger boxes than these are made, they would be found cumbersome to handle.

An actual test made on a job under ordinary conditions proved that a derrick was saving the bricklayer $1.50 on every 1,000 bricks landed on the second floor of a building in course of erection. From this, one can readily see, a derrick would pay for itself on one fair-sized job. A derrick too, would be found indispensable in hoisting scaffold planks, raising heavy trestles, lifting sills, lintels, etc.

Carpentry Labor Problems Solved by Derrick

The carpenter would find in a derrick a solution to his labor problems. His work is so varied that definite figures are impractical, but can be considered in a general way.

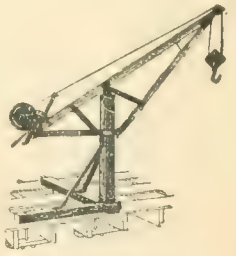


Fig. 1. Handy and compact derrick.

It costs the carpenter at least $1.00 per 1,000 board feet to land lumber such as flooring, sheeting, rough boarding, etc., on the second floor of a building (by hand). 1,000 ft. of pine or hemlock weighs about 3,000 pounds. A one-ton derrick and two men can do it in about ten minutes, taking it in two lifts. Here is a saving of about 60 cents per 1,000 board feet.

A one-ton derrick will lift 85 2x4 in. 12 ft. long, or 45 2x8 in. 12 ft. long, or 28 2x12 in. 12 ft. long, under ordinary conditions. Shingles can be hoisted, nails can be lifted. Heavy beams can readily be picked up and placed in the desired position without undue strain. Heavy frames and bay windows can be lifted quickly to where they are wanted.

Without a derrick the carpenter cannot tender on mill construction. This type of construction which is rapidly gaining favor, for its slow-burning and economical features, is too heavy to handle without lifting equipment.

A one-ton derrick will lift 7 8x8 in. x 12 ft., or 4 10x10 in. x 12 ft., or 3 12x12 in. x 12 ft., or 2 12x14 in. x 12 ft., without overtaxing it. For handling mill construction two derricks would be found very handy, one to lift the timber from the ground, the other a lighter one, known as a framing derrick, to place the timber in position. The framing derrick, as shown in Fig. 2, has a capacity of 1,800 lbs. It is provided with wheels, so as it can be moved along, as the work proceeds. The illustration shows how nicely it can be used to set the heavy timber on the uprights. It can also be hitched to the uprights and drop them into their places, thus great speed can be made. Many other uses of a derrick could be mentioned, but I wish

only to show the most general. If a builder provides himself with a derrick for general work, he will soon find many little money-saving stunts, to which he can put it.

The old-fashioned block and tackle, may have been all right in the slow-moving past and the almost relegated "Jinni" wheel no doubt served its purpose, when labor presented no problems, but to-day, labor is "king." If an established builder cannot afford labor-saving devices, he cannot afford labor which he can save.

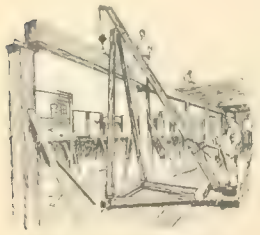


Fig. 2. Derrick used for mill construction.

The foregoing treats with derricks in a general way. No particular make was considered. The various makers are always ready anda nxious to quote prices, and terms. Different derricks have their particular features, so the builder must choose that one which appeals to him, as embodying the features which will give him the best service.

Builders Should Study Furnace Installation

Some builders think that the question of furnace installation is for the plumbers. If he will study the question, however, he will find that the builder has to be consulted. Proper installation is necessary to furnace efficiency. It is now thirty years since warm air furnaces were first introduced.

Since then there has been a steady development in the design of the furnace. Many troubles of installations still arise however.

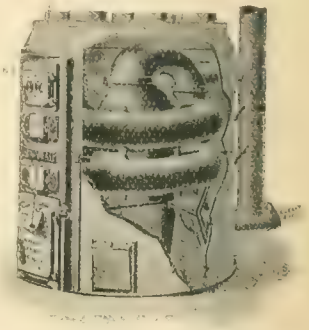
The greatest trouble to-day with the hot air furnace business is that there are architects and builders who never consider the heating until the last moment. Then the most important question arises: What about the heating? Where are the pipes to run up in the walls? By this time joist, studding, braces, over-lapping of joist which could just as easy have been sawn off, gas pipes left in the way, electric wires, etc., all have been placed so that it makes it almost impossible in some cases to run the pipes up the walls as they should be so as to give the best results.

When the heating contractor is called to the job he finds that where he would have liked to have got a large pipe he is compelled to put a small one. All these objections cause friction. A direct and free flow of air to the rooms is prevented. Another thing, many persons are entirely mistaken as to the purpose of the cold air register and do not know where it should be placed.

The Howard Warm Air Furnace

The Howard Furnace Co., 371 Yonge St., Toronto, have installed about 3,500 furnaces in Toronto and vicinity in the past twelve years. Their furnace is illustrated in the accompanying illustration.

In an interview the manager stated that years of experience led them to establish a business built upon a standard of prices at which a thoroughly reliable, efficient and lasting furnace can be built.



HOWARD FURNACE

In installing furnaces they have experts of twenty-five years' experience in warm air heating to supervise installations and assure their proper installation to obtain best results. This service has won the confidence of customers because proper installation is the secret of furnace efficiency.

WEIGHT IN POUNDS OF

Material	One cu. yd.	Two cu. yd.	Three cu. yd.	Four cu. yd.	Five cu. yd.	Cubic yds. for 2 ton	Cubic yds. for 5 ton
Ash, clinkers and cinders	1,700	3,400	5,100	6,800	8,500	2.35	5.9
Asphalt	2,349	4,698	7,047	9,396	11,745	1.7	4.2
Brick, soft	2,700	5,400	8,100	10,800	13,500	1.48	3.7
Brick, common	3,000	6,000	9,000	12,000	15,000	1.33	3.3
Brick, hard	3,375	6,750	10,025	13,500	16,875	1.18	2.9
Brick, pressed	3,650	7,300	10,950	14,600	18,250	1.09	2.7
Brick, fire	3,900	7,800	11,700	15,600	19,500	1.03	2.6
Cement, Rosendale	1,620	3,240	4,860	6,480	8,100	2.47	6.2
Cement, Portland	2,100	4,200	6,300	8,400	10,500	1.90	4.7
Charcoal, hardwood	500	1,000	1,500	2,000	2,500	8.0	20.0
Charcoal, pine	486	992	1,458	1,984	2,430	8.23	20.6
Clay	3,200	6,400	9,600	12,800	16,000	1.25	3.1
Coal, Anthracite, lump	1,875	3,750	5,625	7,500	9,375	2.13	5.3
Coal, Anthracite, broken	1,782	3,564	5,346	7,128	8,910	2.24	5.6
Coal, Anthracite, egg	1,753	3,506	5,259	7,012	8,765	2.28	5.7
Coal, Anthracite, stove	1,736	3,472	5,208	6,944	8,180	2.3	5.7
Coal, Anthracite, chestnut	1,693	3,386	5,079	6,772	8,465	2.4	5.9
Coal, Anthracite, pea	1,646	3,392	4,938	6,584	8,230	2.43	6.1
Coal, Bituminous	1,500	3,000	4,500	6,000	7,500	2.66	6.7
Coal, Cumberland	1,450	2,900	4,350	5,800	7,250	2.76	6.90
Coal, Cannel	1,360	2,720	4,080	5,440	6,800	2.94	7.35
Coke	860	1,720	2,580	3,440	4,300	4.65	11.63
Earth, in bank	3,000	6,000	9,000	12,000	15,000	1.33	3.33
Earth, dry	2,150	4,300	6,450	8,600	10,750	1.86	4.65
Earth, loose	2,000	4,000	6,000	8,000	10,000	2.0	5.0
Gravel, in bank	3,000	6,000	9,000	12,000	15,000	1.33	3.33
Gravel, dry	2,000	4,000	6,000	8,000	10,000	2.0	5.0
Gypsum	3,800	7,600	11,400	15,200	19,000	1.05	2.63
Lime, quick, bulk	1,400	2,800	4,200	5,600	7,000	2.86	7.14
Mortar	2,400	4,800	7,200	9,600	12,000	1.67	4.16
Mud, soft flowing	2,900	5,800	8,700	11,600	14,500	1.41	3.53
Pitch	1,950	3,900	5,850	7,800	9,750	3.05	5.13
Plaster of Paris	2,100	4,200	6,300	8,400	10,500	1.90	4.76
Quartz, broken	2,700	5,400	8,100	10,800	13,500	1.48	3.70
Sand, dry	3,160	4,320	6,480	8,640	10,800	1.85	4.63
Sand, wet	3,200	6,400	9,600	12,800	16,000	1.25	3.12
Tile	3,000	6,000	9,000	12,000	16,000	1.33	3.33
Trap Rock	4,600	9,200	13,800	18,400	23,000	0.87	2.17

WEIGHTS PER CUBIC FOOT IN POUNDS

	Lbs.
Asbestos	192
Brick	119
Fire Brick	137
Portland Cement	81
Clay	120
Anthracite Coal	67
Bituminous Coal	55
Lump Coke	28
Loose Earth	80
Pressed Earth	100
Window Glass	165
Granite	165
Gravel	109
Ice	58
Lime	50
Limestone, broken	85
Oil, petroleum	55
Salt, coarse	45
Sand, dry, loose,	90
Sand, moist, loose	95
Slate	175
Sulphur	127
Water, distilled	62
Water, sea	64
Ashes and Cinders	40 to 45

INFORMATION *on* REINFORCED CONCRETE

Some data gathered from various sources showing a few particulars regarding present practice, electrolysis, etc.

As concrete shrinks in hardening, shrinkage cracks often appear when it is laid in long stretches. It is therefore advisable to make joints in the concrete not more than 30 feet apart. Many times, however, it is desired to build something where a crack would be detrimental to its use, and, in such cases, it is advisable to use reinforcement.

Where waterproof concrete is being constructed, as for instance: cisterns, silos, manure pits, various types of residence, warehouse and office buildings, etc., reinforcement should be placed in the concrete to prevent the appearance of cracks. Where concrete products are made which must withstand a pull on their top, such as fence posts, reinforcement should be used to overcome any liability of the post breaking off.

Reinforcement, therefore, is steel used in the form of rods, bars or wires buried in concrete to withstand the strains which tend to stretch or bend the concrete.

The kind of material used for reinforcement is generally iron rods, fence wire or woven wire fencing.

In order to take up the strains produced in concrete by various loads the reinforcement must be placed in certain positions. General rules for the placing of reinforcement must be decided upon to suit each particular object. For instance in a manure pit, place heavy wire fencing for reinforcing in the middle of the floor slab. In a sanitary well cover mix the concrete 1:2:4 and when the concrete has been placed 1½ ins. deep, lay in woven wire fencing for reinforcement.

Reinforcing for Fence Posts

For fence posts use 3/16 or 1/4 in. round bars or single No. 8 or two No. 12 wires twisted together. The reinforcement should extend to within one inch of each end of post and should be long enough to allow the end of each wire or rod to be bent back on itself two inches. Four rods are used in each post and are placed one in each corner, 3/4 in. from the outside of post. Mix the concrete 1:2:4. Place sufficient in the bottom of the moulds to form a compact layer 3/4 in. thick. On this lay two of the reinforcing rods as above directed. Then "place" the concrete to within 3/4 in. of top of form, lay the remaining two reinforcing rods on same, and fill the forms with concrete to the top.

In reinforced concrete ships the method of Mr. Carl Weber is as follows:

1. A skeleton of structural steel with members running transversely and longitudinally throughout the hull.

2. A system of reinforcing steel rods supported by the skeleton.

3. A layer of wire mesh of fabric placed outside of the steel rods.

4. The concrete shell in which the reinforcement is embedded.

Concrete is applied by means of a cement gun.

Reinforcing Used in Canada Cement Houses

In eight concrete houses built near Montreal by The Canada Cement Co., the flat or panneled type of concrete floor construction is used with a light basket weave of wire and supported on four sides with just enough concrete for stiffening. "The strength of such a slab," said an architect who examined it," is remarkable and far in excess of the tabulated strength generally credited to it."

In these houses 4 in. slabs on 12 ft. spans were used and wood sleepers 1 3/4 ins. in depth were bedded in these slabs, giving a structural slab of only 2 1/4 in. thickness.

Adhesion of Concrete and Steel

Among the results obtained at the University of Urbana to determine the bond between concrete and steel, it was found among a great many other things, that the bond may be divided into adhesive and sliding resistance. Sliding resistance arises from irregularities of the surface of the bar and irregularities of its section and alignment with the corresponding conformations in the concrete. The adhesive resistance must be overcome before sliding resistance comes into action. In other words the two elements of bond resistance are not effective at the same time at a given point. Proceeding from this many conclusions were reached which will be referred to in a succeeding issue of The Canadian Builder.

Electrolysis in Reinforced Concrete

Tests made at the U. S. Bureau of Standards some time ago on electrolysis in concrete, showed that the addition of a small amount of salt to concrete, as is frequently done to prevent freezing while setting, has a twofold effect. First, it greatly increases the initial conductivity of the concrete, thus allowing more current to flow, and, second, it destroys the passive conditions of the iron at ordinary temperatures, thus multiplying by many hundreds of times the rate of corrosion and consequent deterioration of the concrete. Salt should, therefore, never be used in structures that may be subject to electrolytic action. Further, reinforced concrete structures built in contact with sea water or in salt marshes are very susceptible to trouble from electrolysis.

All electric power circuits within the building should be kept free from grounds directly on a portion of the building itself. If the power supply comes from a central station the local circuits should be periodically disconnected and tested for grounds and incipient defects in the insulation. In isolated plants ground de-

tectors should be installed and the system kept free from grounds at all times.

All pipe lines entering concrete buildings should, if possible, be provided with insulating joints outside the building. If a pipe line passes through a building and continues beyond, one or more insulating joints should be placed on both sides of the building. The grounding of electric conduits to water pipes and ground plates is in general not to be recommended in the case of concrete structures.

Lead-covered cables entering such buildings should be insulated from the concrete. Wooden or other non-metallic supports which prevent actual contact between the cable and the concrete will give sufficient insulation for this purpose. Such insulation of the lead-covered cable is desirable for the protection of the cable as well as the building.

In making a diagnosis of the cause of damage in any particular case the fact that a fairly large voltage reading may be obtained somewhere about the building should not be taken as sufficient evidence that the trouble is due to electrolysis. The distance between the points and particularly the character of the intervening medium are of much greater importance than the mere magnitude of the voltage reading. As a precautionary measure, however, all potential readings about a reinforced concrete structure should be kept as low as possible.

Illustrated herewith are some common reinforcing fabrics, plates, etc. In addition to those shown there are a large number of other reinforcing designs such as expanded metal in which the bond is obtained in filling up the diamond meshes with the concrete; reinforcing steel rods of different shapes, etc.

It has been said that reinforcing is to concrete what bones are to a man's body, and builders should give careful attention to the reinforcing when constructing reinforced buildings.

Waterproofing Concrete

Concrete may be made waterproof by either internal or external methods. In both methods the concrete should be a rich, wet mixture. When the work cannot be completed at one time, great care should be taken in joining new concrete to the old so as to make a water-tight joint.

Internal water-proofing may be accomplished by several methods.

By proportioning the aggregates to make the concrete of the greatest possible density.

By adding hydrated lime to the dry mixture—about 5 per cent. of the weight of the cement used.

By adding patent water-proofing compounds.

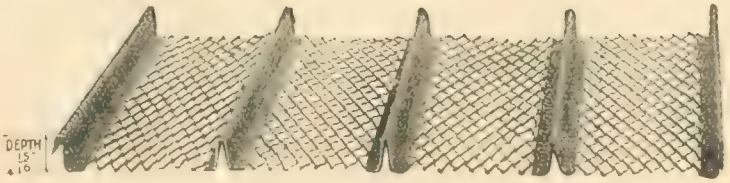
External water-proofing is applied to the exposed surface when the concrete is in place, on the side which is exposed to the water.

Various methods are used, such as plastering with a rich mortar, a wash of neat cement and water or a wash of soap and alum solution.

Patented liquids applied as paints are used, forming either a glazed surface or by being absorbed by the concrete and filling the pores.

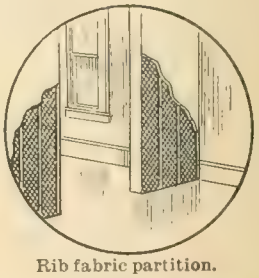
Asphaltum or layers of tarred paper or felt are applied to the surface or between successive layers of concrete.

The local conditions will determine the method to adopt.

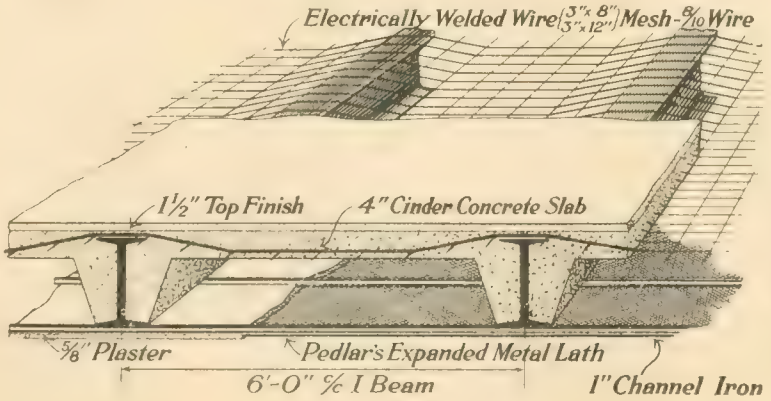


Fine rib fabric, ribs 15/16 in. high, 4 in. apart. Sheets 16 in. wide. Length, 6, 8, 10 and 12 ft.

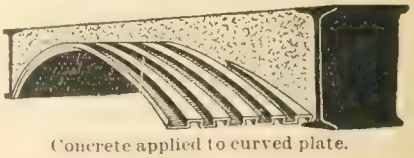
Rib fabric floor.



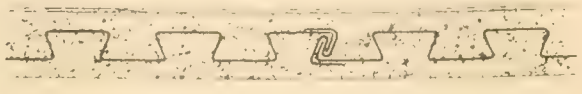
Rib fabric partition.


Electrically Welded Wire (3" x 8" / 3" x 12") Mesh - 5/10 Wire
1½" Top Finish
4" Cinder Concrete Slab
⅝" Plaster
Pedlar's Expanded Metal Lath
6'-0" ⅞ I Beam
1" Channel Iron

Combination use of reinforcing.



Concrete applied to curved plate.



Ferro-dovetail plates for roofs. Corrugations are one inch at top, 13/16 in. wide at bottom, and ½, ⅝ and ¾ in. deep.

(Cuts by courtesy of Pedlar People, Limited.)

Concrete on top, plaster underneath.

SOME PRACTICAL HINTS *on* BARN BUILDING*

The accompanying article gives valuable information on barn construction which should be carefully studied by builders catering to this class of work.

THERE is a growing opportunity for builders in the construction of farm buildings. In taking up this class of work essential principles should be studied. Builders giving special attention to barn construction, for instance, state that the best way to secure these is from the catalogues of concerns manufacturing barn materials and supplies. Any variation from standard rules will have to be dealt with in reference to the location, etc., the same as any other buildings.

Builders should be able to advise the farmer as to the best location of a barn. It should be constructed in the shelter of hills, trees, hedges and other buildings, which will act as windbreaks. All the buildings should be grouped in as compact an arrangement as possible, so that the farmer may save steps in looking after the stock. Barns should run north and south so that the strong direct sunlight from the east and west can flood the row of windows along both sides. The barn will be warmest when arranged this way, because the wind from the north will strike the end. The barnyard should be in the sun on the south or south-west. Driveways will therefore be at the east or west. The barn should be located high enough to permit it to be well drained. A clean yard is very desirable for the sake of the health and cleanliness of the cows. Many farmers have concrete yards. Others fill yards with 6 inches of broken stone covered by a layer of cinders.

It is not costly to make a barn beautiful. Put dormer windows in the roof, add a cornice and a cupola.

There are several distinct types of barns and some things to be said in favor of all of them. There are rectangular, square and round barns. The first of these has gained great favor in recent years. It is built rectangular or consists of one or more rectangles arranged in the form of a T or L. Cows are arranged in two rows running the full length of the barn. Sometimes there are three rows, a row of pens running along one wall. These rectangular barns are seldom more than 36 ft. wide. There is not as much floor space available in them, in proportion to wall space, as in the old-fashioned square barns, but there are other considerations which make them preferable. They are better lighted, even the centre being flooded with sunlight. They can be ventilated more effectively. The two-row arrangement is handier for feeding, cleaning, tying up the cows and other stable work. Not one inch of floor space is wasted, less space being required for passages than in the square barn. Rectangular barns are very neat in appearance. They can be framed more economically than a wide, square barn.

The plan of building a one-story dairy barn when there is a big barn available for storing feed is rapidly becoming popular in this country. There is no objection to the two-story barn. As roof, stable floors, silos and most of the items of expense are practically the same, it is usually thought well to go to the expense of second story walls and have feed stored overhead. The stable is warmer with a loft above, and tight ceilings prevent dust sifting through. Chutes can be built in the two-story barn to save time handling feed and bedding.

Size of Barn

This varies on every farm. It depends upon the size of the farm, the kind of farming carried on, kind and number of head of stock, size of crops, and plans for the expansion of the farm or the herd in the future. This feature should be discussed with the farmer.

Always plan the barn so that stock sizes of lumber for joists, studding, rafters, braces, windows and doors can be used.

The barn should be built so that it lends itself readily to expansion. If a barn is properly planned, it is an easy matter to increase the size as the stock increases or as more land is brought under cultivation. Such a barn can be built in sections nearly as cheaply as if all were put up at the one time. This point is especially important to our Western farmers who feel that they want to make a right start, but cannot afford a big barn. It is better to build a small barn properly and add to it as the place grows, than to build a big place in which the cows are so poorly housed that they cannot pay a profit.

Experience has shown that certain measurements for passages, stalls, mangers, curbs, gutters, and cattle stands are most practical. With these in mind, as well as the requirements mentioned above, it is not difficult to determine upon the right size.

Barn Foundations

Good drainage is one of the first requisites of floor foundations. If the barn is in a low place make a filling so that the stable floor will be 6 or 8 inches above the surrounding ground. If the barn is standing on heavy clay soil, and if it is not practical to get a fill of loose stones or gravel, place drains under the flooring so that it will be kept dry. Run the drain in a straight line underneath the whole length of the cattle stand. If the cement floor, where the cows stand, is properly under-drained so that it will be dry, there is never any danger of injury to the cows' udders from lying on the cement.

In making floor foundations, remember that the passage way behind cattle stands will be level with the sills of the doors, as this passage must be used by the

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cows entering the barn to be tied in their stalls. For wall foundations, nothing can equal concrete. Their size varies with the size of the barn. Some people claim that the foundations should go down below the frost line. This is not necessary, especially in the dry climate of our prairie provinces. Go down until you get a firm bottom and if the ground is damp, or if you are dealing with clay soil, put in a tile drain beneath the wall. Wall foundations should come up at least 6 inches above the floor line and stout bolts must be embedded in the concrete to secure the frame of the stable, if it is desired to have wood walls. In this way the danger of bottom of wood construction rotting will be avoided. For a large barn, with loft above, the base or footing should not be less than 18 inches thick and may taper to a thickness of 1 foot at the surface of the ground. For one-story barns, a footing 15 inches wide is sufficient and it may taper to a thickness of 8 inches at top.

Proportions of cement for wall foundations are 1 of cement, 3 of coarse, sharp sand, and 6 of clean, coarse gravel. If cement is not available, stone makes a good foundation, but it should be made thicker than concrete.

Framing the Barn

A plank frame barn is built entirely of planks no more than 2 inches in thickness, and from 4 to 12 inches in width. Girders, trusses, purlines, and tie plates are all made up of these. If the right method of construction is followed, it can be made very rigid and strong. Indeed, it is a safe frame when we consider that defects in the timber are much more evenly distributed. In the uprights there are no joints. If properly constructed of planks, they retain the strength of the whole timber.

What is generally known as the "hip-roof" is always used with the plank frame. It gives a great amount of storage space in the loft. The centre is open, allowing the hay carrier to work to better advantage. Where there are no interfering cross beams, the hay can be run into the mow at just sufficient elevation to clear the hay already there. There is less labor required both in putting in and taking out the hay. The old-time "raising-bees" become a thing of the past when the plank frame is built. No special skill is required to make the bents. The blue prints show details of construction better than we can describe them. Sizes of lumber are marked and joints at plate and purlin are shown.

Erecting a Plank Frame Barn

After the foundation is in and the frame for the first story wall complete, the supporting columns are put in place, the proper footings for same having been provided. It is important that the footings be of ample size; if they are not, the building may settle, cracking the concrete floor and doing other damage.

Metal columns are recommended, and when they are used the bottom of the column should be two to six inches below the finished floor line, depending upon the method of finishing the floor. When these columns are in place and the concrete set, the girders may be laid.

The floor joists are next put in, and a temporary floor laid on them so that the workmen can move about freely while raising the trusses. When the first truss is completed, lay it on the floor and build the other trusses on top of it, to insure absolute accuracy in all joints and measurements.

When all the trusses have been finished, the first truss is placed in position at the end of the barn. This is usually done by placing the feet of the truss at the place where they are to rest when in position, with the top of the truss towards the centre of the barn. Blocks are then spiked to the joists at the proper points so as to keep the feet of the truss in place while being raised; the feet of the truss rest against these blocks and pivot on them.

A gin pole is erected at the end of the barn in the centre, leaning at an angle of about 45 degrees toward the centre of the barn; a block and tackle is rigged, the rope passing over the gin pole and attached to the upper part of the truss.

A horse or team is hitched to the block and tackle, and the truss quickly raised to position. A few men with guy ropes are necessary to steady the truss while being raised. As soon as the first truss is up it is braced in position. The second truss is raised in like manner, and as soon as it is up the girts are added, as shown on the opposite page. Then one after the other the trusses are put in place, the girts being spiked on as you go along. The last two trusses, when laid in position for raising, will project over the end of the barn. The projecting portion is supported by temporary props, which are removed when the truss is being raised. The end girts can be added at any time convenient.

To put on the plates, no scaffolding is needed, since it is not difficult to climb on the truss itself.

The next step is to put the purlines in place, and raise to position with block and tackle.

Before putting on the rafters and cornice, the siding is nailed on, because it can be done more conveniently before the rafters and the roof boards are in place, there being nothing to interfere with nailing on the boards under the cornice.

Roof Pitches

The "hip roof" is recommended. The advantage of this roof for storage space and appearance have been mentioned. If a horse fork is being used, it must register in the car at the top of the barn with its bundle, which requires more room than some other designs. The greater part of the hip-roof has a very steep slope so that the water runs off quickly and does not get the chance to rot the shingles given by the other two.

Cheaper Plank Frame Construction

A style of framing which is somewhat less costly that even the plank frame construction is a satisfactory structure to be used in barns not over 36 feet wide. As with the other method of framing, 2-inch plank is used entirely. Frame is bolted to sills as before and studding is spaced two feet so that stock sizes of materials can be used without much waste.

The difference between the two methods of framing is apparent upon comparison. The first method requires the construction of well-braced trusses tied together by lower "cords" and spaced ever 12 or 14 feet. Between these, and running across the barn parallel to them at intervals of 2 feet are the joists The joists rest on the beams and the walls. Both joists and cords are made up of three lengths of plank.

The latter method requires the bracing of each rafter, the rafters and studding thus forming a truss every two feet. There are no lower cords, but every joist is spiked to the studding to tie the building together. The joists rest on the beams in the barn and each end on a ledge or ribbon which runs along the studding the full length, studding being notched an inch to hold ribbons more firmly.

In construction of joists or any other part where a double thickness of plank is required, joints must always be broken.

The cheaper frame construction requires 100 feet less of lumber than the other method for every 16 foot length of barn. This includes every truss and every 16 feet of studding and other framing it carries.

The Roof

For roofing, shingles are cool and are easy to get in any part of the country. They are not, however, as durable as a good galvanized roof, which has the further advantage of protecting the barn from lightning.

Barn Doors

In providing barn or stable doors, see that stock sizes are used. Have doors as high as possible. The split door opening both ways, is best.

PROSPECTS *for* BUILDING *for the* YEAR 1918

Address delivered before Hamilton Convention of Ontario Retail Hardware Association.

By G. T. Barnett

President of Bishopric Wall Board Co., Ottawa.

IT has been suggested that I say a few words to you along the line of the building prospects for 1918, and I wish I could predict, with even reasonable certainty, what 1918 has in store for us as regards building, but on looking back to the banner year of 1912, we find in thirty-five of our larger Canadian cities that the building permits issued totalled one hundred and eighty-five millions, while in 1917, the total permits issued in the same cities were only thirty-five millions, a reduction of one hundred and fifty millions, or approximately eighty per cent., but I firmly believe the minimum has been reached.

This large falling off in building was, as we all know, primarily due to the present war, and not only did this set back buildings, but business in all lines was disorganized in the war's early stages, and building has been one of the slowest to recover. Although the war was the primary cause for this falling off in building, yet to-day, the increased cost of raw materials and labor is having a great effect upon present building operations. The advance in cost of building materials since 1914 runs all the way from forty to fifty per cent., yet we cannot blame the different manufacturers for this, as the cost of raw materials and labor has advanced in proportion. I am convinced that in order to offset this extra cost, prospective builders, as well as manufacturers and dealers, should study the tendency to standardize building construction. This is one method of reducing the cost, as by adopting proper designs, much material and labor could be saved.

Notwithstanding this increased cost, the conditions as they are at present, if allowed to continue, will prove disastrous to our country as a whole. We find that workmen congregate in the larger centres, where better opportunities are afforded them in the way of employment. But in many cases, they are living in a congested condition with two or three families in rooms that are only large enough to accommodate one family, but I would particularly emphasize this condition as existing among our unskilled workmen or laborers, where, owing to this congestion, there is a decided tendency to decrease the standard of their home life, and in this connection, it behooves us, as business men, to consider very carefully the housing problem for this particular class of workmen. Some of our larger industrial corporations are erecting homes for the men employed by them, and these are rented to them at a moderate rental. This proposition should not be confined to the larger industries, but the smaller manufacturers and the farmer should also take up this work. If we are to get efficient and satisfactory results from our employees, it is essential that we look after their interest in this respect, by providing them with homes that are warm and durable, and at a cost within their means.

Coming back to the war, we have reason to believe that we can now see through the clouds, and it will not be long, we hope, before our soldiers are coming back to us, and they will require homes for their wives and families, and it is up to us to see that homes are provided for the men who have fought our battles and stood in the mud in the trenches in Flanders defending our homes and fighting for civilization and freedom. Then again, we have also to take care of our gradually increasing population.

We are well aware that the most important thing we have to do is to increase production. In this way, Canada can, and is doing, her share towards winning the war. The next most important consideration, from my point of view, is the construction of modern homes. There is always a certain amount of labor unsuited to farm work which is available for this other important work.

I have already referred to the increased cost of ordinary building materials, and it is the opinion of some of our expert business men that this high cost of materials will continue for some considerable time

(Continued on page 18, col. 2.)

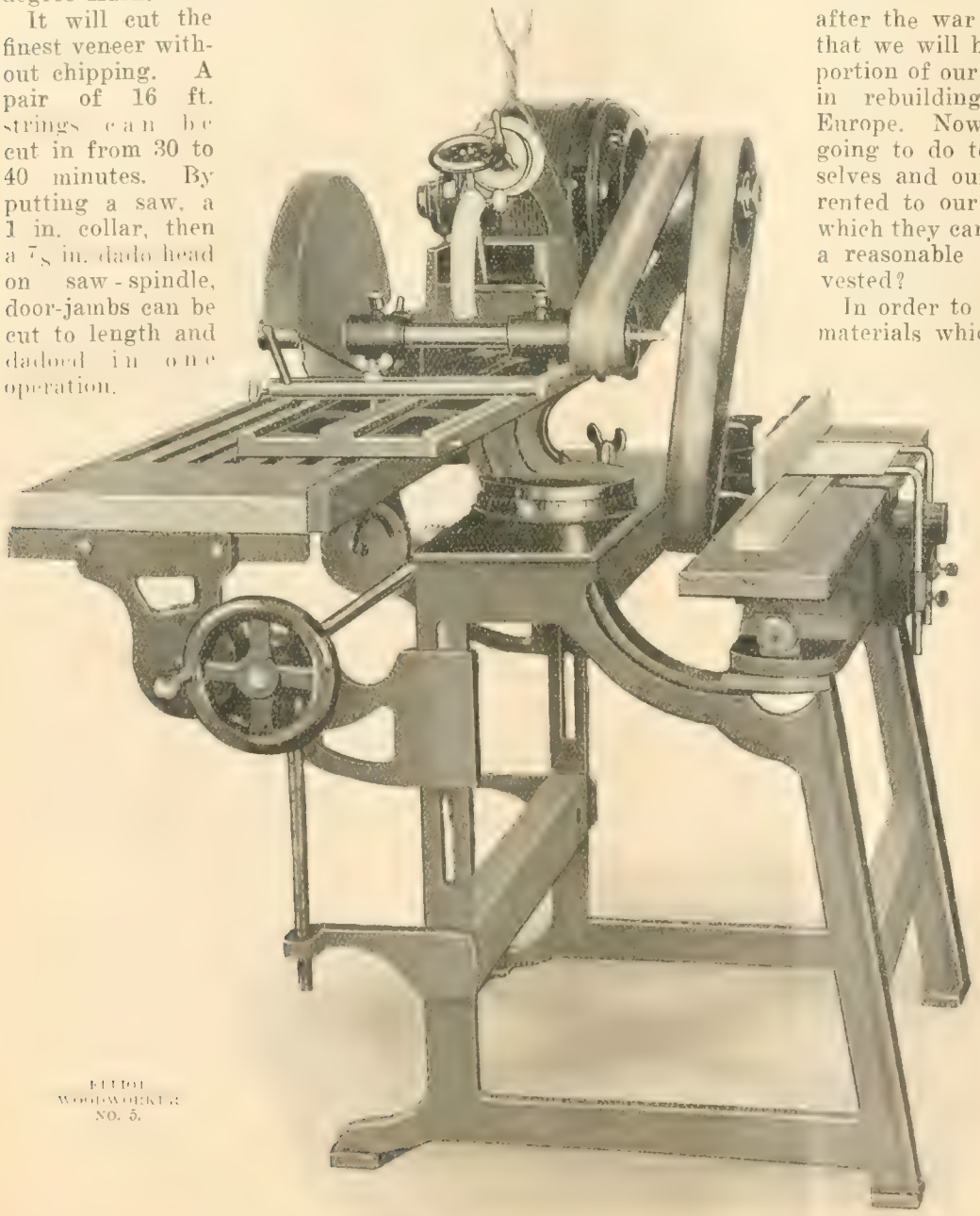
New Elliot Woodworker

The Elliot woodworker has many improvements. The cutting table of the new machine is lowered by a hand wheel at the right of the machine, so that 8 ins. can be cut with a cross cutting saw. By cutting twice, joist up to 4 ins. thick, straight or fire-cut, plumb or side cuts of jack-rafters, studding, heavy flooring as well as the finest trim, can be cut. Machine has a stroke of 28 ins. and will cut 3 ins. thick. The saw guard will take a saw 14 ins. diameter and cut 5 ins. thick.

By putting on a dado head the machine may be used for housing stair strings. The projecting side is used as a gauge.

Get run and rise and mark on string from the back, set overhanging slide to top tread-line, cut ⅞ in. wide, ½ in. deep to noseing all down the string, change to bottom line. Will cut any wedge-room in two cuts. For doors, window-frames, shelving, etc., swing to 90 degree mark.

It will cut the finest veneer without chipping. A pair of 16 ft. strings can be cut in from 30 to 40 minutes. By putting a saw, a 1 in. collar, then a ⅞ in. dado head on saw-spindle, door-jambs can be cut to length and dadoed in one operation.



ELLIOT WOODWORKER NO. 5.

This illustration shows the machine set for ripping and jointing, both running at the same time. One man can rip as the other edges up.

This cut also shows the index-plate. Any degree can be cut. The cutting-table can be tilted to any bevel for ripping. It also slides back and forth for ripping and boring. The whole machine swings a complete circle, bringing the boring-chuck on far end to the front.

With a 14 in. saw 5 in. thick can be ripped. All 2 in. cuttings of joist, studding, etc., can be ripped for bridging and dressed cuttings for drawer-fronts and sides, balusters, etc. It will save material as well as time.

The Elliot Woodworker is manufactured by the Elliot Woodworker Ltd., Toronto.

Prospects for Building for the Year 1918

(Continued from page 17.)

after the war is over, owing to the fact that we will have to export a great proportion of our building materials to assist in rebuilding the devastated area of Europe. Now, gentlemen, what are we going to do to construct homes for ourselves and our employees, which can be rented to our working classes at a rent which they can afford to pay, and yet give a reasonable return on the capital invested?

In order to do this, we must substitute materials which are being manufactured to replace those materials formerly used in construction, and all of these substitutes have their merits, and can be used in practically every class of construction. There are those that are made for interior work only, but others can be used successfully for exterior work, and from information received from some of the leading architects and contractors, the use of these substitutes will reduce, from twenty-five to forty per cent. the present cost of building, or in other words, with these modern building materials, a building can be erected to-day at the same cost as in 1912, and at the same time, a warmer, better, more durable and artistic building can be had, and in connection with this saving, there is also a large saving of time and labor.

Built To Last

THE special qualities of concrete construction that render it ideal for almost any type of building, recommend it especially for factory buildings and warehouses.

Reinforced concrete is fire-proof and permanent. Its first cost is low—its maintenance cost positively less than that of any other kind of building you can erect.

Send for our literature on buildings of this description. It will prove of interest.

CANADA CEMENT COMPANY, LIMITED

10 HERALD BUILDING, MONTREAL

CONCRETE FOR PERMANENCE

MILL CONSTRUCTION FOR WAREHOUSE BUILDINGS : : : :

By A. R. Denison, C.E.

THERE are two standard types of mill construction in general use. The first type consists of large wooden girders, posts with metal caps and bases and heavy spline plank floor laid from girder to girder, and usually covered with 7/8 in. finished floor.

The second type is heavy mill construction and is similar to the ordinary mill construction but has large wooden joists hung between the girders in metal duplex hangers.

Detail of Construction

In mill construction the girders are spaced at a maximum distance of 10 ft. between centres, running from wall to wall and supported on intermediate posts. The ends of girders at posts rest on cast iron or steel caps as shown in Figs. B and F. Where girder enters wall an iron anchor plate, Fig. E, should be used. Girders are grooved to fit on fillets of caps and anchor plates. In case of a steel cap girders are bolted to cap. A 3 in. thick British Columbia fir spline plank floor in 6 in. widths is laid from girder to girder. Joints of this floor should be filled up with hot pitch so as to prevent dust accumulating in and afterwards falling through the joints. On top of this floor a ply of asbestos paper is laid then covered with a finished floor of 7/8 in. tongue and grooved maple or birch. As there are no joists to form a tie the plank floor should have strap anchors every 8 ft. extending across the girders; floors should also be strap anchored to walls. The walls should be corbelled out 4 in. to support ends of floor also to prevent fire passing through between ends of floor and walls. See Fig. C.

The posts should be set in metal bases which are set up on concrete footings. Where large timbers are used for posts a 1 in. hole should be bored through the entire length with 1/2 in. holes intersecting at top and bottom as shown in Fig. A, this will allow for drainage of moisture and will provide ventilation, thus preventing dry rot. If timbers are to be painted immediately, water paint should be used, if oil paint is to be used a reasonable time should be allowed before painting to make sure that all moisture is evaporated. Oil paint fills up the pores of the wood and if all moisture has not been driven out before painting dry rot will set up and cause the centre of timber to decay.

No. 2 type, or heavy mill construction, is similar to No. 1 type, but has heavy wooden joists hung in metal duplex hangers between the girders as in Fig. D. These joists may be spaced at any convenient distance up to 10 ft centres. The girders can be spaced much further apart than in the 1st type of construction. Top of joists are flush with top of girder and a strap anchor is used from joist to joist across girders, forming a tie in this way from end to end of building. Girders form a tie in opposite direction. Floors are laid similar to those in No. 1 construction, but stretching from joist to joist. This form of construction gives the more rigid and steady floor, and a decrease in the number of posts and girders.

In each type of construction a laminated floor may be used in place of spline plank. This consists of 2x4 in. or 2x6 in. dressed timbers laid closely side by side on edge. See Fig. D. This floor is a little stronger than the 3 in. spline plank floor, but the cost of laminated floor is much the greater as it requires additional labor in laying.

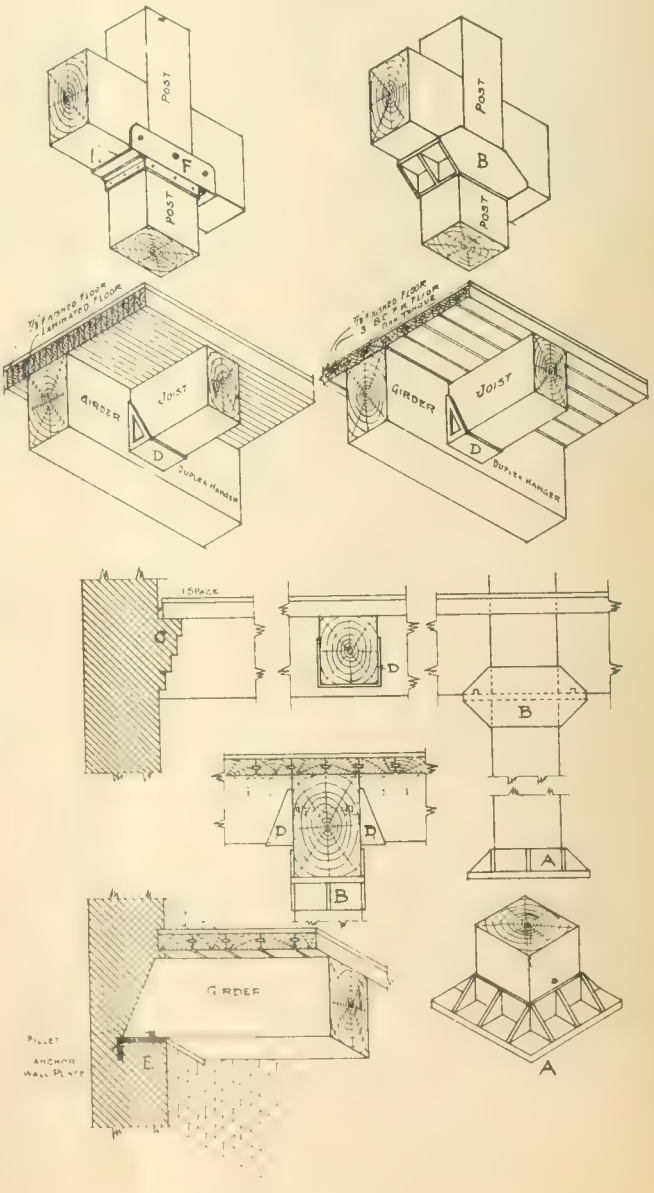
Fire Protection

The sprinklers are placed so as to allow the water to come in direct contact with the entire surface of ceiling and beams, thus giving efficient fire protection.

The beams, posts, and joists, are of large dimensions and all exposed to view, there being no enclosed spaces in floors or walls, fire is prevented from spreading throughout the building unseen.

Kinds of Timber to be Used

A most important item to be considered in these types of construction is the kind of timber to be used. British



Details of mill construction.

Columbia fir or Georgia pine are generally used and are well adapted for this kind of work. British Columbia fir is generally considered the better of the two as it will stand considerably more load than Georgia pine and is not as susceptible to dry rot.

Advantages of These Types of Construction

1. Short time in which buildings of these types can be erected.
2. Economy in space occupied by walls, piers, posts,
3. Easy manner in which alterations can be effected.

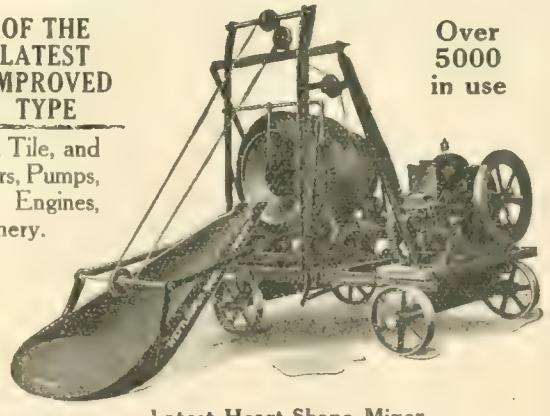
Buildings of these types cost considerably less than reinforced concrete. If elevators, staircases, etc., are enclosed in brick or other non-combustible walls, and all openings fitted with metal covered doors, and provided the building has a proper sprinkler system installed, then the cost of insurance is less than that of reinforced concrete building.

Publishing office building being erected by Messrs. J. G. Kent and Thomas Essery for the Continental Publishing Co., Toronto. This is a fine type of building which may be used for office, warehouse or light manufacturing. This one is of brick and Douglas fir, with hardwood floors, plaster partitions, etc.

CONCRETE MACHINERY OF THE LATEST IMPROVED TYPE

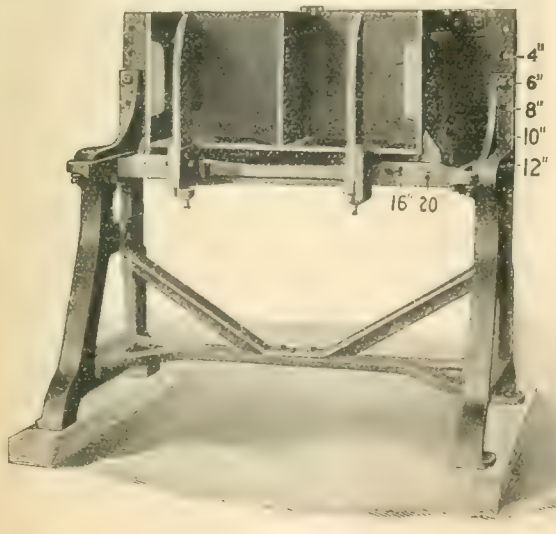
Over 5000 in use

We manufacture a full line, comprising: Heart-Shape Mixers; Brick, Block, Tile, and Sewer Pipe Machinery; Crushers, Rolls, Hoists, Sand Screens, Rock Elevators, Pumps, Cement Tools, Dump Cars, Road Paving Mixers, Derricks, Winches, Engines, Boilers, Tile and Brick Cars, etc.; Builders', Contractors' and Road Machinery.

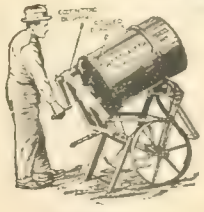


Latest Heart-Shape Mixer.

Made in Canada by a Canadian Firm



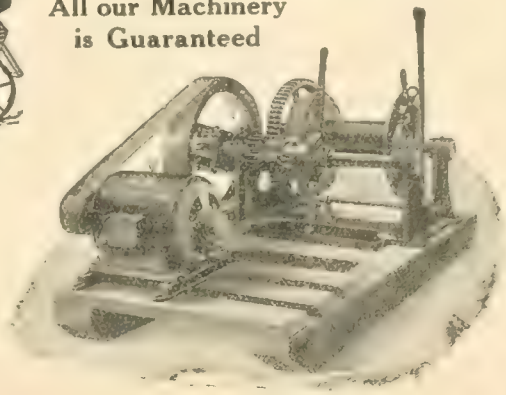
Singer No. 4 Block Machine



Hand Mixer

All our Machinery is Guaranteed

Write for Latest Catalogue and our Special Offers



Hoists (Steam, Gas, or Electric Power)

Wettlaufer Bros., Limited - Toronto, Ont.

News of Trade

From Coast to Coast

New Officers of Chatham Builders' and Traders' Exchange

The following have been elected as officers of the Builders' and Traders' Exchange of the city of Chatham, Ont., for the year 1918:

President—J. A. Hildreth.
Vice-president—C. R. Gay.
Treasurer—W. H. Palmer.
Auditors—B. Blondie, J. Oldershaw.
Financial secretary—A. Tomlinson.
Recording secretary—R. McG. Coyle.

For the coming season the exchange plans to participate actively in all the affairs relating to the building industry. According to the exchange, they have resolved as follows: "That each member will be a committee of one to get more material for the noble structure that is being built. The foundation has proven to have been made of the very best of material. Let each succeeding story be bold, clean-cut, and upright."

Annual Meeting Stratford and Perth County Exchange

The annual meeting of the City of Stratford and County of Perth Builders' Exchange was held on February 1. The yearly reports showed flourishing conditions in all departments, including that of finance.

During the past year another of the members had returned from the firing line in the person of Lieut. Keyes, who gained his commission at the front, having gone over with the 34th Battalion as a private. Both Lieut.-Col. J. L. Youngs and Lieut. John Keyes have again gone across the Atlantic, the former in charge of a Western Ontario battalion, the latter to resume his command of a construction camp.

The officers elected for the year were: Honorary president, Lieut-Col. J. L. Youngs; honorary vice-president, Lieut. John Keyes; president, A. G. Garner; first vice-president, J. W. Lillow; second vice-president, A. G. Everitt; secretary-treasurer, Robert Marson; board of directors: F. Ingram, George Burdette, James Player, Lorne Cook, Emil Kalbfleisch.

Canada Cement Co. Have Good Year

The annual report of the Canada Cement Co. shows that the earnings of the company for 1917 were about 29 per cent. over 1916, previously the best year in the company's history.

Senator Edwards, the president, states that "the demand for your company's product during the past year was approximately the same as the two preceding years, notwithstanding the fact that work on many large and important projects was suspended. The constantly increasing employment of cement for all purposes, especially by farmers and small users, has enabled the company to do a volume of business, the result of which we think will be satisfactory to you." The earnings from the cement business, he adds, were more than sufficient to take care of all fixed charges, preferred and ordinary dividends chargeable to the year's profits. The volume of cement business for 1918 should be practically the same as in 1917.

New Johns-Manville Building

The H. W. Johns-Manville Co. have opened their new building in St. Louis at the corner of Olive and Eleventh Sts. The six-story office building is fireproof construction throughout, and has mastic floors, asbestos wood partitions and an asbestos roof.

The show room, 55x72 feet, with the entire front and side of glass, is the feature of the new establishment. One hundred and twenty-two running feet of show windows afford an unusual display opportunity for the display of the entire Johns-Manvillle line. To supplement the show cases, five kiosks have been built in the rear of the show room to demonstrate the proper roofings to be used on various surfaces and the correct application of the different materials. This practical demonstration of Johns-Manville roofings has attracted much favorable attention from the many callers.

Discolored Maple has Low Shock Strength

Two pieces of maple received from the National Hardwood Lumber Association, one of which was badly discolored, were tested at the Forest Products Laboratory. Where slowly applied loads were used, the two samples were about equal in strength, but in resistance to shock the discolored piece was decidedly inferior. A microscopic examination showed the cell walls of the discolored piece to be partly destroyed by fungi.

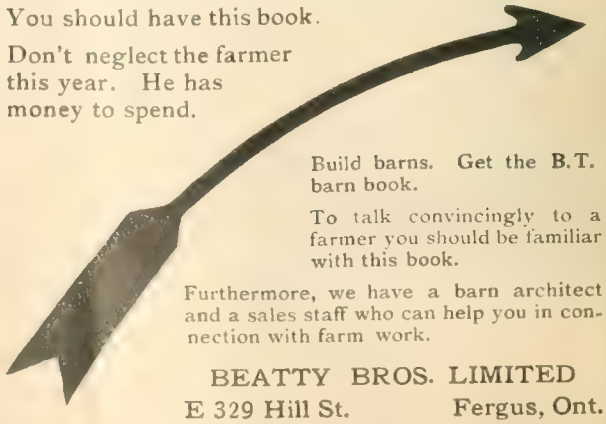
The J. E. Burchell Co., Sydney, have prepared plans for about forty dwellings to be erected in Sydney, C.B., this spring.

BUILDERS

On the opposite page there is an advertisement you should read.

You should have this book.

Don't neglect the farmer this year. He has money to spend.



Build barns. Get the B.T. barn book.

To talk convincingly to a farmer you should be familiar with this book.

Furthermore, we have a barn architect and a sales staff who can help you in connection with farm work.

BEATTY BROS. LIMITED
E 329 Hill St. Fergus, Ont.

FREE!

To every man who is building or remodelling his barn

THIS BT Barn Book shows you how to build your barn from start to finish; tells how to make the foundations; how to lay the cement floors and how to build the walls; how the cattle-stands can be made so they will not be cold; shows the best and most economical methods of laying out the floor space and putting in the stabling; shows right and wrong ways to remodel an old barn; shows how to ventilate barn and build cupolas for the roof. It tells how to frame the barn by a method that saves half the cost of the old way; shows how two men and a team can hoist the bents to position. You can build or remodel your barn yourself with this book to help, because every point is clearly illustrated by full-page photographs and blue print working plans.

This new 352-page book

This is the most elaborate and complete book on barn building ever published in Canada. It contains over 125 views of modern barns. Photographs of up-to-date barns were obtained in all parts of this country, and have been reproduced with full-page and double-page cuts, which show clearly every detail of construction. There are useful tables, showing the best measurement for mangers, gutters, cattle-stands and passages, costs of cement work, best sizes for doors and windows, amount of ventilation for different kinds of stock, capacities of silos, capacities of mows. There are also working plans for 14 different barns and exterior views of the completed barns. Best construction for Hog House is fully illustrated.

BT Galvanized Steel Stalls, Steel Horse Stable Fittings, Steel Cow Pens, Calf Pens, Steer Pens, Bull Pens, Manure and Feed Carriers, and Water Bowls are shown in actual use in many barns. Complete specifications for stable equipment which are useful in getting proper quotations from manufacturers.

This book is printed in colours and is bound with hard covers. It is not a mere catalogue. It is a work of reference which you will prize and keep for years. It is considered authorative on the subject of stable and barn construction. A copy of it should be in the hands of every man who is thinking of building or remodelling a stable or who is going to put in the Sanitary Steel Stable Equipment.

Mail Coupon

Thousands of dollars were spent in obtaining information, plans, and photographs for this book, and in printing it.

Yet we offer it without charge to any man who will write and state if he is building or remodelling this year, when he expects to start the work and the number of head of stock he keeps. If you are building or remodelling next year, or later, you will receive the Barn Construction Section of the Book; this is the part which will interest you most until you are ready to go ahead. It is a neatly bound booklet of 80 pages.

Simply fill in the blanks of the coupon, and you will receive the Barn Book by first mail. You do not obligate yourself in any way.

The high cost of printing the book has forced us to limit the quantity. Make sure of your copy by sending for it to-day.

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Gentlemen: Send me your new 352 page Barn Book, without charge or obligation. I have filled in the blanks below.

Are you thinking of building a barn? .....

If not are you going to remodel? .....

When will you start .....

How many cows, horses, or other stock will you keep? .....

Put an X after the kind of Sanitary Stable Equipment you are interested in

Steel Stalls ( ) Steel Horse Stable Fittings ( )

Manure Carrier ( ) Water Bowls ( )

Hay Carrier ( )

Your Name .....

P. O. ..... Prov. .....

Township ..... Lot ..... Concession .....

Price List of Building Materials—Revised to Date

EDITOR'S NOTE—Great care is exercised in obtaining prices for this department. They are as accurate as it is possible for us to make them. We know, however, that because of varying conditions, different dealers' prices are bound to vary somewhat; and our purpose in publishing this department is to give readers an idea of prices, rather than absolutely definite information.

PRICES AT MONTREAL

Hemlock lumber—		
2x4 in. to 2x12 in., 8 to 14 ft.	$40.00	
2x4 in. to 2x12 in., 16 ft.	41.00	
2x4 in. to 2x12 in., 18 ft.	42.00 to	43.00
No. 1 hemlock decking	42.00 to	43.00
No. 2 hemlock dimensions and 1 in.	34.00 to	37.00
Pine—		
1 in. common and better pine 8 to 12 in. wide, rough	50.00 to	70.00
2 in. white pine, mill stock	46.00 to	54.00
7/8 x 8 and 10 in. pine shelving	62.00 to	67.00
7/8 x 12 in. pine shelving	77 00	
No. 1 white pine flooring	50.00 to	55.00
No. 1 spruce flooring	46.00 to	52.00
No. 1 pine decking, D2S	44.00 to	58.00
No. 1 pine V or beaded sheeting	60.00	
No. 2 pine V or beaded sheeting	50.00	
Pine trim for paint finish—		
4 in. casing, per 100 ft.	3.00	
5 in. casing, per 100 ft.	4.00	
8 in. pine base, per 100 ft.	5.50	
10 in. pine base, per 100 ft.	7.50	
4 in. pine window stool, per 100 ft.	3.75	
Shingles, lath, roofing, etc.—		
No. 1 pine lath	6.50	
No. 2 pine lath	6.00	
No. 1 spruce lath	5.50	
XXX B.C. shingles	5.50	
Cedar posts—fence—		
5 in. at small end, per ft.	.05	
7 in. at small end, per ft.	.07	
Hardware—		
Nails, wire, common, base	5.50	
Nails, cut, common, base	5.70	
Sash weights, cast iron, per 100 lbs. (solid)	3.10	
Tarred felt paper, per roll	.75 to	1.25
Building paper, per roll	1.20	
Brick, tile, terra cotta, sewer pipe—		
No. 1 dry pressed red bricks	18.00	
No. 1 dry pressed buff bricks	21.00	
Red stock bricks	15.00	
Grey stock bricks	14.00	
Wire cut brick for foundation work	12.50	
Fire brick	60.00	
Sewer pipe, 4 inch, per ft.	.15	
Sewer pipe, 6 inch, per ft.	.22½	
Cement, plaster, stone, etc.—		
Cement (bags extra) car lots, bbl.	3.00	
Sand, for cement or brick work, ton	1.10	
Lime, per ton	12.00	
Hydrated lime	18.00	
Mortar color, bbl.	6.50	
Plaster of paris, bbl.	3.05	
Crushed stone, 2 in.	1.40	
Crushed stone, 1 in.	1.65	
Crushed stone, 3/8 in.	1.75	
Hardwall plaster, per ton	16.00	
Gravel, per ton	1.20	
Hair (plaster) per lb.	.15	

PRICES AT TORONTO

Hemlock lumber (sized)—		
2x4 in., to 2x12 in., 12 to 14 ft.	$40.00 to	$41.00
2x4 in., to 2x12 in., 16 ft. and 10 ft.	41.00 to	42.00
2x4 in. to 2x12 in., 18 ft.	42.00 to	43.00
1 in. hemlock, No. 1, 6 in. wide	41.00	
1x8 in. and 1x10 in., 10 ft. to 16 ft.	42.00	
No. 1 hemlock decking	42.00 to	43.00
No. 2 hemlock dimensions and 1 in.	34.00 to	37.00
Pine—		
1 in. common and better pine 8 to 12 in. wide, rough	50.00 to	70.00
2x4 to 2x12, pine common	46.00 to	54.00
7/8x8 and 10 in., pine shelving	67.00 to	72.00
7/8x12 pine shelving	75.00	75 50
White pine flooring	47.00 to	58.00
Spruce flooring	42.00 to	48.00
Pine decking D2S	44 00 to	56.00
Spruce decking	42.00 to	50.00
No. 1 pine V or beaded sheeting	60.00 to	62.00
No. 2 pine V or beaded sheeting	50.00 to	52.00
No. 1 Common long leaf yellow pine—		
2x4 in. to 2x12 in., 10 to 16 ft.	50.00 to	54.00
2x4 in. to 2x12 in., 18 to 20 ft.	50.00 to	54.00
2x4 in. to 2x12 in., 22 to 24 ft.	52.00 to	57.00
Yellow pine finish—		
4/4 x 6, 8, 10 and 12 B. & B. smoke dried	68.00 to	72.00
5/4 x 6, 8, 10 and 12 B. & B. smoke dried	73.00 to	77.00
6/4 x 6, 8, 10 and 12 B. & B. smoke dried	73.00 to	77.00
8/4 x 6, 8, 10 and 12 B. & B. smoke dried	73.00 to	77.00
4/4 x 6, 8, 10 and 12 B. & B. steam dried	68.00 to	72.00
5/4 x 6, 8, 10 and 12 B. & B. steam dried	73.00 to	77.00
6/4 x 6, 8, 10 and 12 B. & B. steam dried	73.00 to	77.00
8/4 x 6, 8, 10 and 12 B. & B. steam dried	73.00 to	77.00
Pine trim for paint finish—		
4 in. casing, per 100 ft.	2.75 to	3.25
5 in. casing, per 100 ft.	3.25 to	4.75
8 in. pine base, per 100 ft.	4.75 to	6.00
10 in. pine base, per 100 ft.	6.00 to	8.00
4 in. pine window stool, per 100 ft.	4.00 to	4.50
Hardwood trim, flooring, etc.—		
Quotations will be given on request. See editor's note above.		
Shingles, lath, roofing, etc.—		
XXX B. C. cedar shingles, per M.	5.50	
N. B. extras	5.50	
No. 1 pine lath, per M.	7.00	
No. 2 pine lath	6.50	
No. 1 spruce lath	6.00	
Roofing:		
1 ply, per sq.	1.25 to	1.90
2 ply, per sq.	1.50 to	2.50
3 ply, per sq.	1.75 to	3.00
Cedar posts—fence—(8 ft.)		
5 in. at small end, each	.40	
6 in. at small end, each	.40	
7 in. at small end, each	.60	
Hardware—		
Nails, wire, common, cwt.	5.45	
Nails, cut, common	5.80	
Sash weights, cast iron (solid)	2.85	
Tarred paper, roll	.75 to	1.25
Building paper, plain	1.20	

Glass— United inches	Star	D.D.
Up 25 (per 100 ft. box)	$10.75	$15.60
26- 34	11.40	16.85
35- 40	11.70	17.85
41- 50	15.40	20.35
51- 60	16.10	20.80
61- 70	17.20	21.05
71- 80	19.35	28.10
81- 84	.....	29.85
85- 90	.....	31.95
91- 90	.....	32.80
95-100	.....	38.05
101-100	.....	42.00
106-110	.....	45.55
Wired glass, per sq. ft.	.16	

Brick, tile, terra cotta, sewer pipe—		
No. 1 dry pressed red bricks, per M.	$18.00 to	$20.00
No. 1 dry pressed buff bricks	18.00 to	20.00
Red stock bricks	14.00 to	16.00
Sand lime bricks	9.00 to	10.50
Grey stock bricks	13.00 to	15.00
Sewer bricks	12.50	
Wire cut brick for foundation work	12.50 to	14.00
Porous terra cotta bricks	12.00 to	15.00
No. 1 enamelled bricks, all colors, standard, from	80.00 to	115.00
Enamelled bricks (shapes)	100.00 to	200.00
Brick salt glazed, carload lots floor and wall, standard, per M.	30.00 to	50.00
Shapes	50.00 to	150.00
Fire brick	45.00 to	75.00
Fire clay, per ton	16.00	
Rough texture brick	20.00 to	35.00
Sewer pipe, 4 inch, per ft.	.15	
Sewer pipe, 6 inch, per ft.	.22½	
Verandah post caps, 16 in. each	1.45	
Verandah post caps, 20 in., each	1.75	
Chimney caps, 1 flue in 1 piece, each	2.00	
Chimney caps, 2 flues in 2 pieces, each	3.50	
Chimney caps, 3 flues in 3 pieces, each (Excelsior)	6.00	
Cement, plaster, stone, etc.—		
Cement (bags extra) (5 bbl. lots)	3.25	
Sand, for cement or brick work, per ton	.85 to	1.00
Lime, ton, gray	12.00	
Lime (ton) white	14.00	
Hydrated lime (Canadian), per ton	16.00	
Mortar color:		
Black, cwt.	6.50	
Red, cwt.	2.50	
Plaster of paris	3.25	
Crushed stone, 2 in.	1.50	
Crushed stone, 1 in.	1.65	
Crushed stone, 3/8 in.	1.65	
Hardwall plaster, per ton	14.00	
Sanded	8.00	
Gravel, per ton	.95 to	1.20
Hair (plaster), per lb.	.15	

WINNIPEG PRICES

Corrected to February 14, 1918, by the Building Material Dealers Association, of Greater Winnipeg, 305 Scott Block, Winnipeg.

Terms—All goods are payable on delivery of same. Without waiving or modifying this term, accounts may be rendered monthly on the first of each month.

Discount—Unless otherwise specified, the prices noted herein are subject to a discount of 5 per cent., in respect of all goods paid for, on or before the 15th day of the month following the month in which same are delivered, and time is the essence of this provision.

Interest—Interest at 8 per cent. per annum will be charged on the price of all goods from the last day of the month following the month in which same are delivered.

Delivery—All quotations are based on curb delivery only. If carried over 20 feet, there will be a minimum charge of 50c per ton.

Sand, gravel and torpedo sand—	Per yard
Delivered	$ 2.30
F.O.B. yard and F.O.B. cars, city	1.80
Crushed stone, crushed and screened gravel, 1½ in. to 2 in.—	
Delivered	2.60
F.O.B. yard and F.O.B. cars, city	2.30
Crushed stone, crushed and screened gravel, 3/4 in. to 1 in.—	
Delivered	2.85
F.O.B. yard and F.O.B. cars, city	2.50
Stone dust—	
Delivered	2.55
F.O.B. yard and F.O.B. cars, city	2.25
Roofing gravel—	
Delivered in city or F.O.B. cars	3.00

Note—All material quoted above is delivered in 2 yd. loads; for deliverey of less than 2 yd. loads add 50c net extra per load.

Rubble stone—	Per cord
Delivered	$14.20
F.O.B. yard and F.O.B. cars, city	12.95

Lime in bulk—White lime, grey lime, Moosehorn and Bowman lime—

Lime in bags 2c per bush. over bulk price.

	Per bush.
Delivered	$ .45
F.O.B. yard	.42
F.O.B. cars at kiln	.31

Note—All above delivered prices are for loads containing 40 bushels or more; for less than 40 bushels delivered add 50c net per load.

Lime is sold by measure only.

Lime in barrels (including barrels)— Diamond and Star Brands.

	Per bbl.
Delivered	2.75
F.O.B. yard	2.60
Moosehorn and Bowman Brands—	
Delivered	2.40
F.O.B. yard	2.30

Kelly Island Brand—

Delivered	2.35
F.O.B. yard	2.25

Above delivered prices are based on load lots.
Note—A barrel of lime weighs 200 lbs. gross, or about 180 lbs. of lime.

Hydrated lime in paper bags (50 lbs.)—
Bags included in price, but not returnable.

	Per ton
Delivered	$18.50
F.O.B. yard	17.40
F.O.B. cars, city	16.35

Hydrated lime in cotton bags—(100 lbs.), bags included in price.

	Per ton
Delivered	$26.00
F.O.B. yard	24.50
F.O.B. cars, city	23.00

Sacks returnable 30c each.

Portland cement in bags—

	Per bbl.
Delivered	$4.40
F.O.B. yard	4.30
F.O.B. cars, city	4.20

Carloads on track direct on job, $3.80 per barrel.
Note—Four sacks make a barrel, 350 lbs.

Mortar cement in bags—

	Per bag
Delivered	$ .64
F.O.B. yard	.62
F.O.B. cars, city	.54

Note—1 sack mortar cement weighs 70 lbs. Delivered in ton lots; less than ton lots 50c extra.

Best Bros. Acme and No. 1 Keenes cement in bags—

	Per bag
Delivered	$2.50
F.O.B. yard or cars, city	2.25

Empire Keenes cement in 100 lb. bags—

Delivered	$2.25
F.O.B. yard or cars, city	2.10

Note—a sack contains 100 lbs. gross.

Fine Keenes cement in bags—(3 sacks per bbl.)

	Per bbl.
Delivered	$13.10
F.O.B. yard or cars, city	12.25

Superfine Keenes cement in bags—(3 sacks per bbl.)

Delivered	15.50
F.O.B. yard or cars, city	14.70

Gypcement—

	Per ton
Delivered	$16.00
F.O.B. yard	15.00
F.O.B. cars, city	14.25

Hardwall plaster Nos. 1 and 2, wood fibre plaster, ivory finish,, gold dust finish—

	Per ton
Delivered	20.25
F.O.B. yard	19.25
F.O.B. cars, city	18.50

Empire finish plaster, Peerless prepared finish, Sinite finish plaster (in bags)—

Delivered	24.00
F.O.B. yard	23.00
F.O.B. cars, city	22.25

Plaster of paris and Stucco (in bags)—

Delivered	$23.00
F.O.B. yard	22.00
F.O.B. cars, city	22.75
Carloads on track, direct on job	22.00

Note—20 sacks make 1 ton gross.
Delivered in ton lots; less than ton lots 50c extra.

Plaster of paris in barrels—(Price includes barrels.)

	Per bbl.
Hammer Brand, 320 lbs. gross	$4.40
Empire and Peerless, 250 lbs. gross	3.70

Plasterers' hair—

Per bale	$3.30
Per bush.	.90

Mortar color—

	Per 100 lbs.
Red	$5.00
Black	5.50
Buff	5.50
Chocolate	6.50

Drain tile—

3 in. delivered or at yard, each	$ .06
4 in. delivered or at yard, each	.08

Each tile is one foot long.

Wood lath—

No. 1, delivered, per M.	$6.00
No. 2, delivered, per M.	5.25

Gypso fibre—

	Per M. ft.
¼ in. x 32 x 36—	
Delivered	$32.25
F.O.B. yard	27.20
F.O.B. cars, city	26.15
5/16 in. x 32 x 36 x 48 and 60—	
Delivered	33.00
F.O.B. yard	28.60
F.O.B. cars, city	27.25
⅜ in. x 32 x 36 and 48 and 60—	
Delivered	36.30
F.O.B. yard	32.70
F.O.B. cars, city	30.80
½ in. x 32 x 36 and 48 and 60—	
Delivered	41.50
F.O.B. yard	37.00
F.O.B. cars, city	35.00

Note—If delivered in more than 2,000 feet lots, $2.00 per M. less.

Plaster blocks—

	Per 100 sq. ft.
3 in. hollow tile—	
Delivered or F.O.B. yard	$10.50
F.O.B. cars, city	8.50
4 in. hollow tile—	
Delivered or F.O.B. yard	11.50
F.O.B. cars, city	9.50
6 in. hollow tile—	
Prices on application—	
2 in. furring tile—	
Delivered or F.O.B. yard	8.50
F.O.B. cars, city	6.50
2 in. solid tile—	
Delivered, or F.O.B. yard	10.50
F.O.B. cars, city	8.50

Terra Cotta tile prices on application.

Fire clay—

Delivered or F.O.B. yard, per 100 lbs.	1.25
Per ton	25.00

Fireclay (Canada)—

Delivered, per M.	$70.00
F. O. B. yard	67.50
F. O. B. cars	65.00

In quantities less than 1M, 7½c each.

Fire brick—(American)

	Per M.
Delivered	$90.00
F.O.B. yard	87.50
F.O.B. cars, city	82.50
Less than M. delivered, per 100	9.50

Special prices on fire blocks and specials on application.

Common clay brick	15.00
Chimney and select brick	16.50
Veneer brick	18.00
Sandlime brick	14.50

PRICES AT VANCOUVER

Shingles, lath, etc.—

XXX B. C. cedar shingles, per M.	$ 3.25
No. 1 pine lath, per M.	2.35 to 2.65

Brick, tile, terra cotta, sewer pipe—

No. 1 dry pressed red bricks, per M.	30.00 to 45.00
No. 1 dry pressed buff bricks, per M.	40.00 to 45.00
Red stock bricks	14.50 to 16.00
Fire brick	45.00
Fireclay, per ton (car lots)	12.50
Sewer pipe, 4 inch, per ft.	.13½
6 in., per ft.	.23
8 in., per ft.	.35
10 in., per ft.	.45
12 in., per ft.	.55

Cement plaster, stone, etc.—

Cement, Portland (bags extra), per bbl.	$ 2.65
Keenes cement, per bbl. (sacks extra)	9.00
Lime, per bbl.	1.75
Hydrated lime, per ton	16.00
Alca lime, per ton	16.00
Plaster of paris, per bbl.	4.50
Hardwall plaster, per ton (car lots, bags extra)	16.50

How Much Wall Paper for a Room

A builder should know how to figure out the answer to this question. The accompanying panel shows what quantity of paper should be purchased for any room.

Take for example a room 10x12 ft. with 8 ft. ceiling, 2 doors and 2 windows. The side wall will require 11 single rolls from which 1 single roll should be deducted for the additional two openings, leaving 10 single rolls for the side walls, or 5 double rolls. The ceiling will require 4 single rolls or 2 double rolls. Sixteen yards of border will be required.

TABLE FOR RECKONING QUANTITIES OF WALL PAPER REQUIRED

Size of room	Height of room	No. of doors	No. of windows	Single rolls of side wall	Single rolls of ceiling	Yards of border
8 x 10 feet ..	8 ft.	1	1	8	3	13
10 x 12 feet ..	8 ft.	1	1	11	4	16
10 x 14 feet ..	8 ft.	2	2	10	5	17
12 x 12 feet ..	8 ft.	2	2	10	5	17
12 x 14 feet ..	8 ft.	2	2	11	6	20
12 x 16 feet ..	9 ft.	2	2	14	7	21
14 x 16 feet ..	9 ft.	2	2	16	8	22
14 x 18 feet ..	9 ft.	2	2	17	9	24

Deduct one single roll of side wall for every additional two openings.
One single roll of wall paper will cover about 30 square feet.

Moving Picture Theatres Should Be Fireproof Structures

During the last five years, the moving picture theatre has become one of the leading sources of amusement. It is estimated that more than 500,000 people attend such theatres every day, and it is important, therefore, that every possible precaution be taken to ensure their safety. As a rule, women and children largely predominate in the audiences, and, in the event of panic, the danger is, therefore, at a maximum.

Over 29 per cent. of the existing moving picture theatres in Canada are of frame construction. In 92 cases, families are living above theatres with stairways as the only means of escape in the event of fire. The actual figures are given in the table below.

The existence of so large a percentage of frame buildings is startling when the hazards connected with moving picture theatres are considered, but the fact is capable of simple explanation. While the moving picture business was still in the experimental stage, promoters were uncertain as to the profits that might be expected, and hence they were unwilling to risk large sums of money in sound construction. Many theatres were erected hastily and cheaply, and, in some cases, with little consideration for the question of safety. At the present time, statutes regulating the construction of theatres and providing for the safety of the patrons are in effect in all the provinces in Canada, and these are supplemented by municipal ordinances.—J.G.S.

Moving Picture Theatres in Canada

Cities and towns	Brick theatres	Frame theatres	Dwellings over theatres
Exceeding 10,000 population ...	338	27	26
5,000 to 10,000 population	59	31	15
1,000 to 5,000 population	115	109	27
Under 1,000 population	28	57	24
Total	540	224	92

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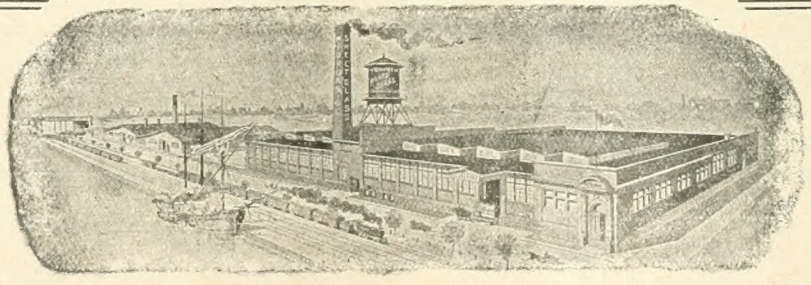

GLASS BENDERS TO THE TRADE

THE TORONTO PLATE GLASS IMPORTING COMPANY, LIMITED

DON ROADWAY

Plate, Window, Figured, Stained, Wired, Bent, Mirror and Ornamental Glass

TORONTO

MILTON BRICK

Have you seen our "Milton Rug Brick"? If not, call at our Toronto Office, or write for samples. It's to your interest as well as ours that you see this beautiful range of brick.

Toronto Office: 50 ADELAIDE STREET W.

Head Office: MILTON, ONT.

We can save money for you

If you will investigate the numerous advantages of

DENISON INTERLOCKING HOLLOW TILE CONSTRUCTION

We have an Engineering Dept. at your service.

MAIN 2935

THE SUN BRICK CO., Limited

32 TORONTO ST. TORONTO

"YANKEE"

PLAIN RIGID DRIVERS

Cabinet Style No. 95
Standard Style No. 90

They cannot loosen in the handle, in use or abuse. You have our guarantee.

No. 90
14 sizes

No. 95
11 sizes

They are as durable as the high-grade steel that composes them, and will render faithful service for generations. The comfortable handle and various lengths of blades make them suitable for all classes of work.

Your dealer can supply you

Let us sena the "Yankee" Tool Book

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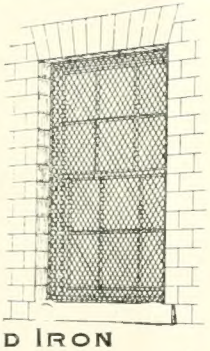

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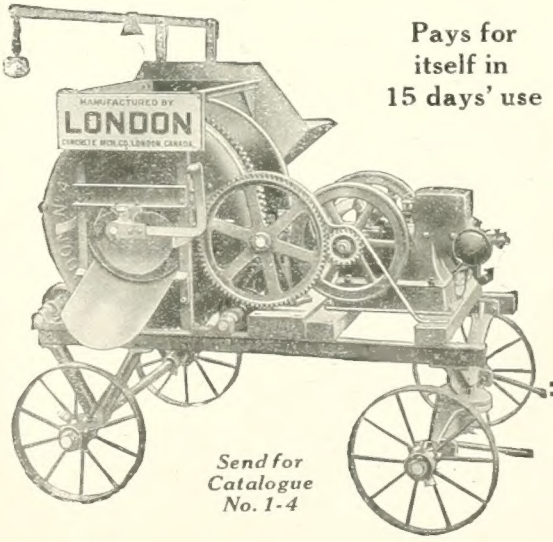

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